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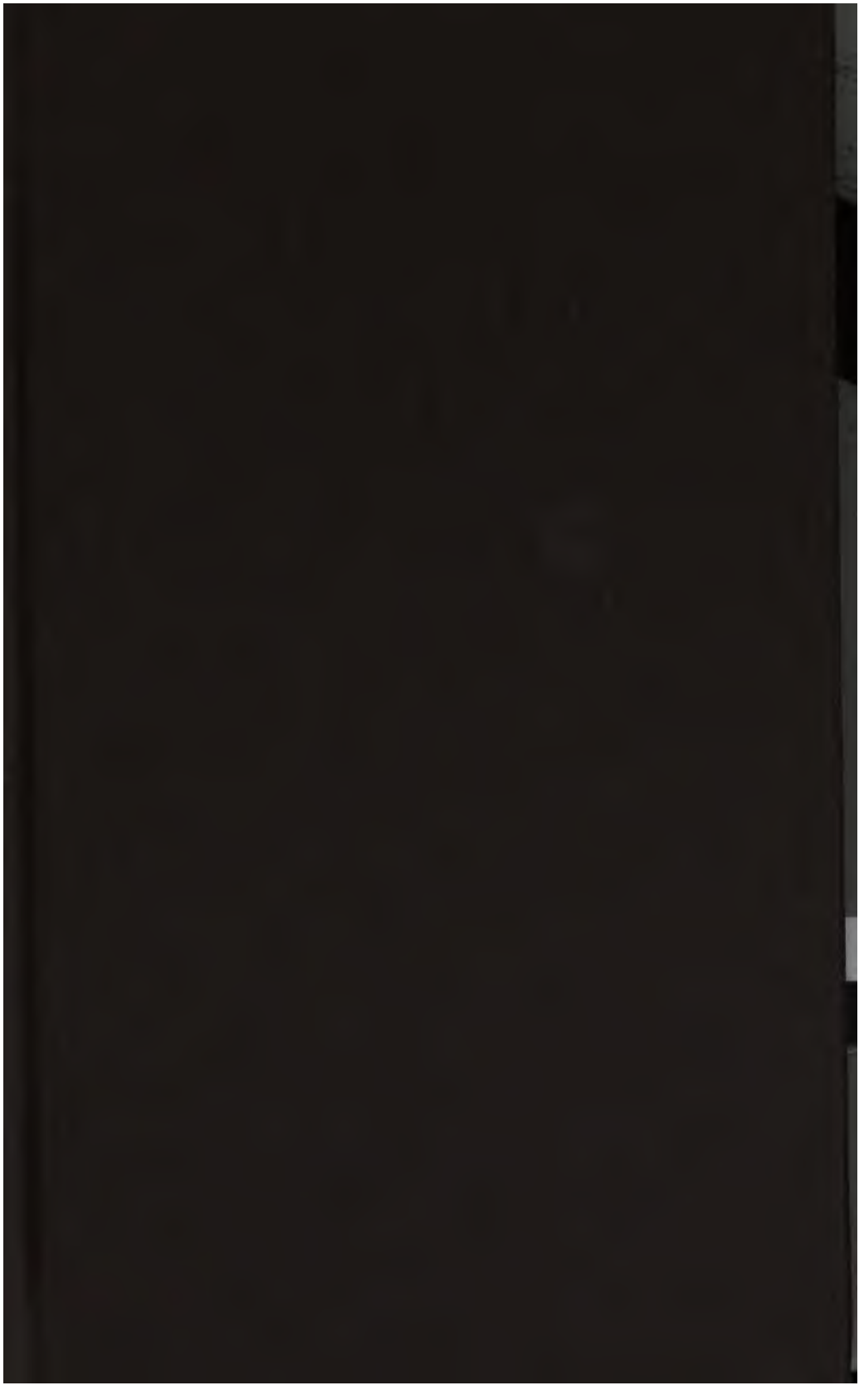

"Even the last respectable writer on Logic in the British Empire, previous to these gentlemen (Whately, [illegible], Hill, Huyshe), Dr. Richard [illegible], whose popular and able volumes, were published in 1807, defines Logic as art and science; and this in [illegible] so similar to those of Dr. Whately, that we cannot [illegible] in believing that this author had his predecessors [illegible] definition immediately in view."

* Edinburgh Review. Vol. 57. No. 115. page. [illegible] note.

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LOGICK;

OR,

AN ESSAY

ON

THE ELEMENTS, PRINCIPLES,

AND DIFFERENT

MODES OF REASONING.

BY

RICHARD KIRWAN, ESQ. LL.D.
P.R.I.A. F.R.S. &c. &c.

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TO THE

RIGHT HONOURABLE

LORD BARON NORBURY,

CHIEF JUSTICE OF THE COURT OF COMMON PLEAS IN IRELAND,

IN TESTIMONY OF THE HIGH ESTIMATION

IN WHICH

NOT ONLY HIS PRIVATE VIRTUES,

BUT PARTICULARLY THE

ABILITY, DILIGENCE, AND IMPARTIALITY,

MANIFESTED IN

THE DISCHARGE OF HIS JUDICIAL DUTIES,

ARE HELD

BY HIS DEVOTED

HUMBLE SERVANT,

THE AUTHOR.

PREFACE.

THOUGH to reaſon be natural to man, yet experience too fully proves, that his reaſonings on moſt ſubjects, are frequently erroneous. The true way of detecting and avoiding errors in any ſubject, is to examine the accuracy of the elements, principles, or mode of reaſoning, on which a concluſion is founded. Now, the elements of reaſoning are *words*, the principles are the fundamental propoſitions or maxims affirmed or denied, and the modes of reaſoning are the various forms in which the propoſitions of which it conſiſts, are preſented and connected with each other.

Hence, the proper object of logick, is to determine with preciſion, the exact ſignification of *words*, in what relation ſoever they may ſtand, the general and particular properties and varieties of *propoſitions*, the nature of ratiocination, the validity of the grounds on which it reſts, and, laſtly, the means of inveſtigating truth. Of ſo comprehenſive an object, nothing more explicit can here be ſaid; but more light will be thrown on this

ſtatement, in treating of each of theſe heads in particular.

That the ſcience of logick is, by its abſtraction from ſenſible objects, dry and abſtruſe, muſt be admitted; but this inconvenience may be obviated by ſubjoining particular examples, where neceſſary. The diſguſt that attends its ſtudy, is amply compenſated by its utility, in diſcuſſing any ſubject, whether moral, political, theological, metaphyſical, legal, phyſical, hiſtorical, critical, mathematical, or economical. For, in which of theſe have not diſputes ariſen, or do not ſtill exiſt, or have not miſtakes occurred, from inattention to ſome or other of the rules or obſervations, which an exact treatiſe of logick ſhould compriſe; many of which may be found in thoſe already extant, as that of Port Royal, Le Clerc, Dr. Watts, and Mr. Duncan; but, in all of them, ſome are ſtill wanting. Mr. Locke's ineſtimable Eſſay on the Human Underſtanding, though it ſupplies excellent materials, is far from preſenting an exact ſyſtem of logick.

In no ſcience have the rules of logick been ſo well obſerved, as in that of mathematics, for, in none is their application ſo obvious and eaſy. Their terms are ſimple, and for the moſt part neither obſcure nor ambiguous. Their propoſitions are equally ſimple, and their mode of reaſoning being founded on the relation of identity, or equality with

objects

objects contained in ſome or other of the foregoing propoſitions, and theſe ultimately on ſelf-evident axioms, is demonſtrative. But, to diſcover this relation in many inſtances, a comprehenſive view of all the preceding propoſitions, an intenſe and unbroken attention, a luminous diſcernment of the cleareſt method of obtaining a ſolution, are requiſite. Hence, ſome * have been led to imagine, "that the true way of acquiring a habit of "reaſoning cloſely, and in train, is to exerciſe "ourſelves in mathematical demonſtrations; that "having got the way of reaſoning which that "ſtudy neceſſarily brings the mind to, they may "be able to transfer it to other parts of knowledge "as they ſhall have occaſion." This, however, is an egregious miſtake; the mode of reaſoning of mathematicians being founded on the relation of identity or equality, is not transferable to any other ſcience, into which mathematical conſiderations do not enter, as ethics, juriſprudence, whether natural or municipal, medicine, chymiſtry, &c. theology, metaphyſics, &c. which are founded on relations entirely different. On the contrary, the habit of mathematical reaſoning, ſeems to unfit a

* Duncan's Logick, p. 224, 225. Locke on the Conduct of the Human Underſtanding. Watts' Logick, Part III. chap. iv.

perſon for reaſoning juſtly on any other ſubject, for, accuſtomed to the higheſt degree of evidence, a mathematician frequently becomes inſenſible to any other. Thus *D'Alembert*, one of the ableſt mathematicians of the laſt century, was, as *Mr. La Harpe* tells us,* a ſceptic in every thing elſe; though under the guidance of no unruly paſſion, his letters ſhew him to have been an inveterate enemy to Chriſtianity. *Condorcet* was not leſs ſo. *Proclus*, an eminent mathematician of the fifth century, wrote moſt abſurdly on other ſubjects, and particularly a refutation of the Chriſtian religion. *Fatio*, a diſtinguiſhed mathematician of the beginning of the laſt century, became a downright fanatic.† Biſhop Warburton‡ tells us, that the oldeſt mathematician then in England, was the worſt reaſoner in it. *Barbeyrac*, in the preface to his tranſlation of *Grotius, De Jure Belli et Pacis*, informs us, that a mathematician undertook to refute it, but of this refutation he ſays, "on n'a jamais rien vu de plus pitoyable, et on "ſeroit ſurpris qu'un mathematicien pût ſi mal "raiſonner, ſi l'on n'avoit d'autres exemples bien "plus illuſtres, qui montrent clairment que l'etude

* Lycée, vol. 15. p. 129.
† Hiſt. Acad. Berl. 1792. p. 12.
‡ Preface to Julian, p. 21.

"des

" des mathematiques, ne rend pas toujours l'eſprit " plus juſte en matiere de choſes qui ſont hors de " la ſphere de ces ſciences." And *Le Clerc* remarks, " qui aſſueti ſunt mathematicis ideis, quæ " facillime à ſe invicem diſtinguuntur, et animad- " vertuntur, ubi volunt ſecundum notæ artis regu- " las de rerum publicarum aut domeſticarum " adminiſtratione judicare, ineptiſſima ferunt ju- " dicia."*

The chief advantage poſſeſſed by mathematical ſcience, reſults from the clearneſs of its definitions, at leaſt of ſuch as are neceſſary for its demonſtrations, and the ſimplicity of its ſigns, which are objects of ſenſe. But logick requires equally clear definitions of the ſenſe in which the terms it employs ſhould be taken, though, from the intellectual nature of its object, they cannot be exhibited to the ſenſes. Many mathematical, (indeed unneceſſary) definitions have been conteſted even by mathematicians themſelves, ſuch as the definition of *number*, differently given by Euclid, Stevinus, and Sir Iſaac Newton.† Nor, have they

* Logick, vol. i. p. 150. And Condillac ſays, " nous " avons quatre metaphyſiciens celebres, Deſcartes, Mal- " branche, Leibnitz, et Locke; le dernier et le ſeul, qui ne " fut pas geometre, et de combien n'eſt-il pas ſuperieur aux " trois autres ?" Condill. vol. vi. p. 225, in 12mo.

† Hutton's Mathem. Dict. *Number*.

even

even agreed on the definition of *magnitude*,* and as to habituating the mind to intenſe application, there is no ſcience that does not equally require it, and in ſtudying it, the habit is much more advantageouſly obtained. So far are mathematics from being neceſſary to logick, that, on the contrary, logick is frequently neceſſary for detecting the errors of a mathematician, of which inſtances may be ſeen in the logick of Port Royal, part. iv. chap. iv. and v. and Encyclop. Mathem. *Infini.* If logick has had its ſophiſms, mathematics has had its paralogiſms, and algebra, in particular, many abſurdities. Nay, the frame of mind neceſſary to conſtitute a great dialectician, ſeems different from that neceſſary to conſtitute a great mathematician, for it is ſaid, that Bayle could not underſtand Euclid; 12 Bibliotheque choiſie, p. 223.

But though mathematics cannot ſuperſede the ſtudy of that part of logick, which treats of the ſignification of words, the genuine import of different propoſitions, the nature of ratiocination, and rules of interpretation, yet they appear to me of great uſe, in eſtimating the degrees of probability, a ſubject which hitherto has not been compriſed, (no more than the general rules of inter-

* Encyclop. Mathem. *Grandeur.*

pretation,)

pretation,) in any treatiſe of logick, or, at leaſt, very ſlightly noticed. Of probability in general, I have treated at large, and found no other branch of mathematics neceſſary, but common arithmetic, when the probability of teſtimony only is concerned. In other caſes, the ineſtimable works of the late excellent Dr. Price, and of Mr. Morgan, ſhould be conſulted.

Omittting thoſe writers, who, to very little purpoſe, but with great ingenuity, have applied the rules of probability to various games, I believe Sir W. Petty was the firſt that applied them to important objects; and Leibnitz,* in the year 1669, applied them to political reaſoning, in a tract, which he compoſed on the occaſion of an election of a king of Poland. He tells us,† "La "philoſophie practique, eſt fondée ſur l'art d'eſti- "mer les degrés des probations qui ne ſe trouvent "pas encore dans les auteurs logiciens. Pluſieurs "argumens, probables joints enſemble, ſont quel- "quefois une certitude morale, et quelquefois non; "il faut donc une methode certaine pour pouvoir "determiner. On dit ſouvent avec juſtice, que "les raiſons ne doivent pas être contées, mais "peſées; cependant perſonne ne nous a donné "encore, cette balance qui doit ſervir, a peſer la

* 6 Leibn. 243. † Ibid. 246.

"force

" force des raiſons, c'eſt un des plus grands " défauts de notre logique." This defect I have endeavoured to ſupply, partly from my own meditations, and partly from the works of *Condorcet*.

Mr. Locke, whoſe bile was excited by the ridiculous jargon, which in his time aſſumed the name of logick, ſeems to reject this ſcience entirely; for, from what elſe but peeviſhneſs could he have ſaid, " that a man of ordinary capacity well underſtands " a text or a law that he reads, till he conſults an " expoſitor, or goes to counſel; who, by the time " he has done explaining them, makes the words " ſignify either nothing at all, or what he pleaſes."* His objections to ſyllogiſms, proceeded from the ſame temper, and will be conſidered in the body of this work.

The celebrated *Dr. Blair* judged more coolly, and more juſtly, " that even where nature dictates " the uſe (of any of our faculties,) it will not fol- " low thence, that rules are of no ſervice; all " ſcience ariſes from obſervations on practice. " Practice has always preceded method and rule, " but method and rule have afterwards improved

* Like a certain judge in this country, about ſeventy years ago, who continually fretted when a lawyer ſpoke in reply, ſaying, that he always perplexed what was before perfectly clear.

" and

"and perfected practice in every art. We every day "meet with perſons who ſing agreeably without "knowing one note of the gamut, yet it has been "found of importance to reduce theſe notes to a "ſcale, and to form an art of muſic; and it "would be ridiculous to pretend that the art is of "no advantage, becauſe the practice is founded in "nature."*

The knowledge of logick is of the higheſt importance in all controverſies, wherein reaſon alone preſides, particularly in the commoneſt of all, legal controverſies: the ſcience of ſpecial pleading, in particular, is founded on the ſtricteſt obſervation of its rules; ſo is alſo the art of taking juſt exceptions to anſwers; of detecting the fallacies of arguments; of briefly collecting and preſenting them in their full force; in laying down and applying the rules of evidence, according to the ſubject matter; in aſſigning and applying the due interpretation of words or clauſes in ſtatutes, covenants, agreements, deeds, deviſes, &c. The rules of evidence, with reſpect to facts, ſhould be diligently attended to in theſe countries, where all men are liable to be ſet on juries, and particularly by juſtices of the peace, to whoſe deciſion many matters are referred, and even, in many caſes, the

* I have applied to logick what Dr. Blair ſays of figurative language.

liberty

liberty of the ſubject. Hence, the great and virtuous judge, Sir John Eardly Wilmot, in a letter to his ſon, whom he intended for the legal profeſſion, tells him, "logick is certainly dry and unentertaining, but ſtretch all the nerves and ſinews of your mind to attain it, for it is of infinite uſe in ſetting a keen edge upon the underſtanding, and beſides it gives an eagle eye in detecting falſe reaſoning and ſophiſtry. I never knew an able logician who did not acknowledge and feel the utility of it in forenſic practice."

The nature of propoſitions in general, and their preciſe ſignification in whatever manner modified, their various relations, the extent of the truth or falſehood reſulting from theſe relations, and alſo the laws of ratiocination, have been explained with tolerable accuracy by many of the ſcholaſtics, and moſt ſucceſsfully by the Nominaliſts; but the gleam of light which they diffuſed on theſe, and many metaphyſical ſubjects, was too ſtrong for the age in which they lived; they were ſoon overpowered by their numerous adverſaries, and their writings at preſent can with difficulty be procured.* The intolerant bigotry of the ages that preceded the

* They are ſcarcely mentioned by any of the moderns, but the celebrated Profeſſor Dugald Steward, in his excellent treatiſe on the Philoſophy of the Human Mind. Chap. iv. ſec. 3, ſee alſo, 4 Leibn. 59.

reformation,

reformation, confined the vigorous exertions of men of the greateſt mental abilities to ſubjects the leaſt important. Thus ſhackled, they were compelled to diſplay their ingenuity on queſtions the moſt frivolous and futile, often unintelligible; yet, amidſt their worthleſs droſs, many queſtions may be found, which, though apparently ſilly, are in reality connected with the moſt important inquiries, whether political or theological. For inſtance, the firſt article of the parliamentary impeachment of the Deſpencers, in the reign of Edward the IId. relates to the ſcholaſtic queſtion, *utrum relatio terminetur ad abſolutum an ad relativum.* This Leibnitz acknowledges. *Scholiaſticos agnoſco abundare ineptiis ſed aurum eſt in illo cæno.**

Hence I have retained ſuch of their obſervations and diſtinctions, as ſeemed to me important and conducive to accuracy and preciſion; their cumberſome treatiſe on ſyllogiſms, I have curtailed and modified. Condillac indeed, (an excellent metaphyſician) rejects, as uſeleſs, the detail of the varieties of propoſitions,† but it is plain he has not conſidered the neceſſity of noticing them in legal and theological controverſies. In this treatiſe I have inſerted every obſervation

* Operum, vol. v. p. 355.

† Art de Penſer, chap. 10. ad finem.

that

that appeared to me uſeful to reaſoning on any important ſubject, and endeavoured to prevent the diſguſt frequently concomitant on abſtruſe reſearches.

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uſual practice of mankind. Of the extrinſic probability of facts and doctrines. Theſe are authority, legal precedents as to doctrines, and teſtification as to facts. Teſtimony may be conſidered with regard to the witneſs, that is, the perſon who gives it, or with regard to the fact teſtified. With regard to the witneſs, we are to conſider his credibility, abſtracting from the fact teſtified, and with regard to the fact teſtified, to the claſs of facts it belongs to - 224

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LOGICK.

PART I.

OF THE ELEMENTS OF REASONING.

CHAPTER I.

OF THE OBJECT OF LOGICK, AND DEFINITIONS OF SOME GENERAL TERMS.

1. LOGICK is both a ſcience and an art; it is a *ſcience* in as much as by analyſing the elements, principles, and ſtructure of arguments, it teaches how to diſcover their truth or detect their fallacies, and point out the ſources of ſuch errors. It is an art inasmuch as it teaches how to arrange arguments in ſuch manner that their truth may be moſt readily perceived, or their falſehood detected.

2. All arguments are expreſſed by *ſigns*, the moſt uſual of which are *words*.

3. Words connected or diſconnected by any mental operation or affection are called *propoſitions*;

ſitions; thus *God is good* is a propoſition, as goodneſs is affirmed of God. *Good God!* is alſo a propoſition, as the connexion is formed by the ſentiment of admiration. *Stand Sun* is also a propoſition, the words being connected by an act of the will, that is, Sun be thou ſtanding, &c.

4. But the connexion or diſconnexion moſt uſual in reaſoning, conſiſts either in *affirming* that connexion, or *denying* it, with ſome, or without any limitation; of ſuch propoſitions therefore only, I mean here to treat. One propoſition is frequently equivalent to two propoſitions, particularly when the connexion is not expreſſly founded on the relation of identity. Thus when it is ſaid that *God created the world*, this is equivalent; firſt, the *world was created*; and, ſecondly, the *Creator was God.*

5. Hence words may be conſidered in their relation to propoſitions; firſt as they are ſignificative of things; or, ſecondly, as to their mode of ſignifying things; thirdly, as relative to each other. But, before we proceed further, it is neceſſary to define the terms here employed.

6. *Science*

6. *Science* is a ſyſtem, that is, an arranged collection of truths immediately or mediately deduced from firſt principles.

7. *Art* is the practical knowledge of executing its particular objects.

8. *Principles* of any ſcience, are the firſt truths from whence others are derived.

9. *An argument* is a propoſition tending to evince the truth or falſehood, or doubtfulneſs, of ſome diſputed aſſertion.

10. *Reaſoning* is the deduction or inference of one propoſition from two other propoſitions, one of which is often not expreſſed but always underſtood.

11. *Truth* here denotes the conformity of *ſigns*, or propoſitions with the objects they announce or expreſs. Thus a weather-cock which denotes a W. wind, when ſuch a wind really exiſts, announces a *truth*; but if it marks a N. wind, when the wind is at weſt, it announces a *falſehood*.

12. A *ſign* is that which, beſides its own appearance, denotes or ſuggeſts ſomething elſe:* thus the print of a man's foot, beſides

* Hence all ſigns as ſuch are relative.

its own ſhape, denotes that it was impreſſed by the foot of a man; ſo words, beſides the ſounds they conſiſt of, denote the things which, according to the different languages, they are deſigned to denote.

CHAPTER II.

OF WORDS AND PROPOSITIONS.

13. *Words* are articulate ſounds to which ſome ſignification is annexed, which may be different not only in different languages, but even in the ſame language, at different periods of time, or in different circumſtances.

SECTION I.

OF WORDS CONSIDERED RELATIVELY TO THEIR SIGNIFICATION.

14. The primary end of words, as ſigns, is to mark the things ſignified, and not principally the ideas we have of thoſe things, as Mr. Locke would perſuade us. For what concernment has any man in another man's thoughts,

thoughts, (unleſs thoſe thoughts themſelves are the things or objects ſignified?) Thus if I tell you that a particular houſe is made of wood, I do not mean the houſe exiſting in my idea, but the real houſe; conſequently I do not merely mean to make known to you my ideas, but the things I ſpeak of. It is true, that I cannot with truth ſpeak of any thing, but according to the ſenſation, idea, notion, or perception I have of it; but of this I need not inform any one, it being always tacitly ſuppoſed. Thus if I ſay, that a certain tower is *round*, which on a nearer approach is found to be *angular*, I ſhould not have fallen into any miſtake, if I meant only to convey my *idea* of it, (according to Mr. Locke's terminology;) but as I certainly meant the real tower, it muſt be allowed I was miſtaken. Even a child, when he ſays there is *gold* on a peacock's tail, means real gold, and not merely that it is gold in his own idea; he calls gold all he knows of that metal, namely, its ſhining colour, but he does not mean to tell you, that to be ſo, in his idea of it: this you yourſelf muſt know, unleſs you ſuppoſe him to lie.

15. Then the truth is, that words ſignify *things*, that is as many properties as are known to the ſpeaker to appertain to any thing.

16. By *things* I mean any perceptible or intelligible objects; of these, many are obſerved to be referable to and accompany each other, and therefore to be indicated by the same *name*. Thus a particular taſte, ſmell, colour, degree of hardneſs, and coherence, being obſerved to accompany each other and apparently to belong to the same tangible object, the aggregate is called an apple; another group of ſenſible objects is called a *pear*, another *wood*, *iron*, *ſtone*, &c.; all ſuch aggregates of objects concomitantly perceived by our ſenſes, and impreſſed in a ſtated regular manner on all ſenſitive beings, have diſtinct names; and the particular appearances that compoſe each aggregate, are called the *properties* of theſe aggregates. The word then that denotes the aggregate, denotes explicitly and includes all the known properties of the aggregate, without excluding any that may hereafter be known to be comprizable therein. The name, denoted at firſt only the most obvious properties; for inſtance, the ſhining yellow

yellow colour of gold, its hardneſs, malleability, weight, and fuſibility. None but a child could affix this name to colour alone; but by degrees, its leſs obvious and relative properties were diſcovered: it was found to be heavier than an equal bulk of any other body then known; that it was more malleable and ductile than any other metal; that it was more fuſible than iron, &c. though leſs ſo than tin or lead: theſe properties were generally known; chymiſts diſcovered many other properties which it exhibits when expoſed to other bodies in various circumſtances, which are not yet nor ever can be exhauſted. Thus this word, in the minds of different men, comprehends a greater or leſſer number of properties, and the ſame may be ſaid of all other ſenſible aggregates.

17. The properties comprehended in the ſignification of a word, of which, if any were omitted, it would ceaſe to denote the aggregate on which it was originally beſtowed, and alſo thoſe properties which were ſubſequently found to appertain to it, are called the *comprehenſion* of that *word*, or the word is ſaid to comprehend them. Thus gold comprehends

in its ſignification, not only that bright colour, weight, malleability and fuſibility, to whoſe complexity that name was originally impoſed, but alſo its ſolubility in *aqua regia*, its fixity in a ſtrong heat, its affording a blue or purple precipitate with tin, &c. &c.; if a metal were found which poſſeſſed all theſe properties but one, it would either not be called gold, or at leaſt it would be called *a different ſpecies of gold*. So liquidity being one of the properties, to the aggregate of which the name *water* was originally beſtowed; when hardened by cold, it is no longer called water, but *ice*. Yet though hardneſs was one of the properties on the aggregate of which the name *gold* was originally impoſed, nevertheleſs, when this hardneſs diſappears, and liquidity is introduced by heat, the melted gold is ſtill called gold, and does not acquire a new name for two reaſons; firſt, becauſe in its melted ſtate it is ſeen by few, and does not interfere with the common concerns of human life, (as water in its ſolid ſtate does); and, ſecondly, becauſe the melted ſtate is evidently forced and the reſult of art; for if the gold be left to itſelf, it naturally returns to its primitive hardneſs.

18. Though

18. Though words are arbitrary in their primitive inſtitution, yet when once their ſignification is fixed, we are no more entitled to alter it than to call a tree an elephant; for, being no man's private poſſeſſion, but the common meaſures of commerce and communication, it is not for any one at pleaſure to change the ſtamp they are current in; at leaſt where there is a neceſſity to do ſo, notice of it ſhould be given.*

19. From the ſimilarity of the thinking principle in the general maſs of mankind, it might naturally be expected that in expreſſing the objects of their thoughts, a ſimilar uniformity, if not of the ſounds, at leaſt of the ſignification denoted by thoſe ſounds, ſhould alſo be found; and indeed in one claſs of perceptions, namely, that of *ſenſations*, ſuch uniformity of ſignifications is really found: thus all men agree in giving to different colours ſufficiently diſtinct, different diſtinct names in their different languages. What in Engliſh one man calls *white* or *red*, all other men uſing the Engliſh language call by the

* Locke, Lib. III. cap. xi. ſec. 11.

ſame

ſame names. No difference occurs except in expreſſing the degrees of intenſity of the ſame colour, or the nearly approaching ſhades or mixtures of other colours, which in no language have obtained ſimple ſpecific names generally known, though many perhaps are diſtinctly expreſſed by artiſts particularly occupied about them, as painters, dyers, jewellers, &c.; thus alſo the ſenſations of high and low ſounds, of ſweet, bitter, and ſour taſtes, of heat, cold, hard, ſoft, rough, ſmooth, and other tactile ſenſations, have among all nations obtained particular, diſtinct, verbal expreſſions univerſally agreed upon. Now the principle from which this general agreement ariſes is, that theſe ſenſations being impreſſed by an external cauſe, univerſally acting on all men, with perfect uniformity in the ſame circumſtances, and while their reſpective organs of ſenſation are in their natural healthy ſtate, could not fail of receiving, reſpectively, ſimilar verbal indications.

20. So alſo the diſtinct operations of the mind, *willing*, *reaſoning*, and *remembering*, are too obviouſly different to have been ever confounded, and the ſame obſervation may be extended

extended to the more diſtinct mental paſſions, as *love, hatred, anger, grief, fear*, &c.: accordingly they do not want appropriate diſtinct expreſſions in any language.

21. But when other ſtates of the mind, whoſe accurate diſcrimination was of leſs importance to ſocial intercourſe, became the ſubject of philoſophic inquiry, the uniform deſignation of the preciſe meaning of the terms employed to denote them, neceſſarily became more difficult; nor were the ſame terms always employed in the ſame ſenſe, even by the ſame author. The difficulty of pointing out the more latent ſtates of the mind could no otherwiſe be removed, than by aſſimilating theſe ſtates to the ſenſations and ſenſible operations to which they bore ſome analogy, and applying to them ſimilar expreſſions.*

22. Though by adopting this artifice, it might be expected that the more latent mental ſtates would be pointed out with the ſame clearneſs, perſpicuity, and accuracy, as are found in the expreſſions of ſenſible objects; yet as the analogies, on which their denomi-

* Condillac, 1 Gram. 210.

nations

nations are founded, are not confined to one ſet of ſenſible objects, but may be found betwixt theſe mental ſtates and other ſets of ſenſible objects, the denominations may be different. Thus the mental view of an abſent ſenſible object which originally was perceived by the ſenſe of ſeeing, was by ſome denominated an *idea*, that is an *appearance*, from its reſemblance to the original ſenſation; but alſo, as in this ſecond view of the object, it was as if it were *caught* by the mind, its exhibition, in that reſpect, bearing ſome analogy to the ſenſe of *touch* when objects are *graſped*; it was by ſome called *apprehenſion*, and by others *conception*.

23. The celebrated Mr. Horne Tooke, in a very ſubtle and ingenious work, has ſhewn that even thoſe particles that denote the relations of objects or of ſentences with each other, originated from circumſtances apparent to the ſenſes.

24. Imperfect as ſome of theſe analogies may be, yet if any of them had been rigidly adhered to and ſuitable denominations adopted, much perplexity and ambiguity might have been avoided in metaphyſical reſearches; from

their

their frequent, or abſolute neglect, together with the doctrine of abſtract ideas, that obſcurity and confuſion have ariſen which have brought the ſcience of metaphyſics into utter contempt. *

25. To diſſipate this obſcurity, and prevent all ambiguity, we need only to define the preciſe ſignification of the terms employed, grounded on the cloſeſt analogies, either to ſenſations, or to the moſt diſtinct and generally-known operations, perceptions, or emotions of the human mind, and point out the true ſignification and uſe of abſtract terms.

25.* Of all the terms expreſſing whatever the mind is conſcious of, the moſt general is *ſtate*, it being applicable to every caſe in which the vital principle of mind can be ſuppoſed to exiſt; it is evidently grounded on the analogy betwixt the condition of the mind and that of bodies, which neceſſarily exiſt in ſome ſtate or other.

26. *Perception* is the next moſt general term expreſſive of mental ſtates, but it denotes only the *paſſive* ſtates, as ſenſations, ideas, ſentiments, and paſſions, but not the

* See Edgeworth on Education, Vol. III. p. 130, 8vo.

active,

active, as judgments and volitions: its etymology ſufficiently ſhews that it firſt denoted tactile ſenſations, but was after extended to the viſual; and, finally, to all other ſenſations in which the mind is paſſive, and thence by analogy it denoted other paſſive mental ſtates.

27. However, words that do not denote ſenſible objects, but the more hidden ſtates of the mind, as ideas faculties, operations, and notions, are to be underſtood in any eſteemed author in the ſenſe in which he employed them, let that ſenſe be, as we think, ever ſo improper.

28. Thus as Mr. Locke, contrary to the uſage of moſt other writers, by *knowledge* means the agreement of ideas, we muſt in reading him take it in that ſenſe. Originally it denoted corporeal ſtrength; but afterwards, as ſcience was found in many caſes equivalent to ſtrength, it was taken in that ſenſe. It is derived from *kunna*, which in the Gothick had both thoſe ſenſes. See Ihre's Dictionary.

29. By *judgment* Mr. Locke denotes conjecture, or a deciſion of probability: in this alſo he is ſingular.

30. A very important miſtake with reſpect to

to the uſe of words has been committed by moſt writers, previous to the age of the diſcerning Berkeley, in ſuppoſing that general words primarily denoted general abſtract ideas. * For ſince it is certain that ideas are tranſcripts of things perceived by ſenſe, it is evident that ſince no *general* thing exiſts, but all exiſting things are particular, ſo ideas muſt be the tranſcripts of particular things only: thus as all the men now exiſting (or that have ever exiſted) are particular individuals, and as no ſuch thing can exiſt as *man in general*, ſo all ideas of men muſt be the ideas of particular men, and not of man in general, unleſs the idea of one particular man may be ſaid to repreſent, as it does in many reſpects, *all men*. Thus a line an inch long, may be ſaid to repreſent a line of any length; for when a geometrician requires you to draw a *line*, he leaves it to your choice to draw a line of any length you pleaſe; or if he requires you to form

* I ſay *moſt* writers, becauſe the Nominaliſts, who firſt perhaps ſince the Chriſtian Æra made this obſervation, were generally condemned, neglected, and forgotten. Dr. Gillies has ſhewn that this truth was known even to Ariſtotle. See his Analyſis, Vol. I. p. 69.

a tri-

a triangle, without ſaying any thing more, he leaves it to your choice to form an equilateral triangle, an iſoceles, or a ſcalenum. Which ever of theſe you form, it repreſents all the others in the general properties of a triangle. Thus the propoſition, that the three angles of a right-lined triangle, are equal to two right angles, is equally true with reſpect to any of the abovementioned.

31. The origin of general words is well explained by Mr. Locke,* omitting only his mention of general ideas. Nothing is more evident, ſays he, than that the ideas of the nurſe, father, and mother, are, like thoſe perſons themſelves, only particular, and their names are confined to them; but afterwards children find there are a great many other perſons, who in ſhape and other qualities reſemble their father; theſe, as well as their father, they hear called *men*, and thus they find that the word *man* may indifferently be applied to each or any of them; and as thus they come by the general *name man*, they eaſily advance to names ſtill more general; for,

* Locke, Book III. cap. iii. ſec. 6, 7. Condillac, 1 Gram. 180, 12mo.

obſerving

obſerving ſeveral things that differ from men, and therefore cannot be comprehended under the name *man*, have yet certainly qualities wherewith they agree with men, as body, life, ſenſe, and ſpontaneous motion: they denote theſe united qualities by a term of ſtill greater generalization, and comprehend them under the name *animal*. Hence it is as unneceſſary as it is impoſſible, that general words ſhould denote general abſtract ideas; all that is neceſſary to underſtand their meaning is, that a meaning or notion ſhould be annexed to them applicable to various perſons or things, or that they ſhould denote a particular idea that repreſents an indefinite number of other particular ideas.

32. There is alſo a circumſtance which rendered this ſubject dark and intricate, firſt diſcovered by Dr. Berkeley, which muſt appear ſurpriſing to every one; namely, that words are underſtood even when they excite no diſtinct idea or notion whatſoever. Thus the words or figures 102 and 108, for inſtance, are well underſtood, and the latter known to exceed the former, though we can form no idea or repreſentation of either of theſe

numbers abſtracted from the words or figures that denote them; nay, not even if they were applied to particular things. It is then ſufficient that we ſhould know that their preciſe meaning was once *definitely* underſtood by us, and may ſtill, if inveſtigated, be clearly aſſigned and enumerated; nay, the ideas even of ſenſible things do not ariſe in our minds, when the words that denote them are heard. Suppoſing, ſays Mr. Burke, we were to read a paſſage to this effect:—" the river Danube " riſes in a moiſt and mountainous ſoil in the " heart of Germany, where winding to and " fro it waters ſeveral principalities, until " turning into Auſtria and leaving the walls " of Vienna, it paſſes into Hungary; there, " with a vaſt flood augmented by the Save " and the Drave, it quits Chriſtendom, and " rolling through the barbarous countries " bordering on Tartary, it enters by many " mouths into the Black Sea." In this deſcription many things are mentioned, as mountains, rivers, and the sea; but let any one examine and ſee whether he has had impreſſed on his imagination any pictures of a river, mountain, city, watery ſoil, Germany, &c.:

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it is indeed impoſſible in the rapidity and quick ſucceſſion of words in converſation. He adds, "when I ſpeak of red, blue, and "green, I have no actual ideas of thoſe co- "lours; I know I can have them, but then "an act of the will is requiſite, and they muſt "be applied to ſome particular objects; in "converſation, it is very rarely that any image "at all is excited in the mind, as every one "may experience."

33. This obſervation holds ſtill more ſtrongly with reſpect to words that denote complex notions (the mixed modes of Mr. Locke), and which I ſhall call complicative words. * Theſe are abbreviations of other words denoting both paſſive and active ſtates of the mind connected with each other; for inſtance, a *ſentiment and an action.* Thus the word *beneficence* denotes particular actions performed in particular circumſtances, and also a ſentiment of approbation of ſuch actions.

The word *virtue* is more general, and denotes actions to which a ſentiment of approbation is annexed, as the word *vice* denotes

* 6 Condillac, 37, 71, and 91.

generally all actions to which ſentiments of diſapprobation or horror are annexed; now it is certain that in the ſignification of moſt of theſe words, and particularly of thoſe that denote virtues or vices, as *liberality*, *generoſity*, or *murder*, *adultery*, &c. or any thing generally approved or diſapproved, theſe *ſentiments* chiefly predominate, and no preciſe repreſentation of the things or actions which they alſo denote, is actually raiſed in the mind. Hence, as Locke himſelf obſerves, "moſt men make "uſe of words inſtead of ideas, at leaſt when "the ſubject of their meditations contains "complex ideas.—For the ideas theſe words "ſtand for, being for the moſt part imperfect, "we reflect on the names themſelves, as they "are more clear, certain, and diſtinct; the "name occurs much more readily than the "complex idea, which requires time and at-"tention to be exactly recollected and repre-"ſented to the mind, even by thoſe who "have formerly been at the pains to do it, "and is impoſſible to thoſe, who, though "they remember the greateſt part of the "common words of their language, yet never "conſidered what preciſe ideas moſt of them

"ſtand

" ſtand for: thus many talk of religion, con-
" ſcience, power, right, church, &c. of which
" they have only confuſed or obſcure notions."
Locke, lib. iv. cap. 5. ſec. 4.

34. Yet though theſe words do not immediately ſuggeſt any ideas, ſtill, as Mr. Burke juſtly remarks, " being uſed on any particular
" occaſion wherein we receive ſome good or
" ſuffer ſome evil, or ſee others affected with
" good or evil, or which we hear applied to
" other intereſting things or events, and ap-
" plied in ſuch a variety of caſes, that we
" know readily by habit, to what things they
" belong, they produce on the mind, when-
" ever they are afterwards mentioned, effects
" ſimilar to thoſe of their occaſions." Eſſay on the Sublime, part v. ſec. 2. And the penetrating Berkeley long before remarked, that,
" words which might at firſt have occaſioned
" ideas fit to produce the paſſions of *fear*, *love*,
" *hatred*, *admiration*, *diſdain*, &c. afterwards,
" when language grew familiar, on hearing
" the ſounds or ſeeing their characters, thoſe
" paſſions are immediately excited without
" the intervention of thoſe ideas. Thus we
" are affected with the promiſe of a *good thing*,

" though we have not an idea of what it is: " even *proper names* themſelves (which are " neither general nor complexive), do not " ſeem always ſpoken with a deſign to bring " into our view, the ideas of thoſe individuals " that are ſuppoſed to be marked by them; " for example, when a ſcholaſtic tells me " *Ariſtotle hath ſaid it*, all I conceive he means " by it, is to diſpoſe me to embrace his opinion, " with the deference and ſubmiſſion which " cuſtom has annexed to that name: an effect " ſo inſtantly produced, that it is impoſſible " that an idea either of his perſon, writings, " or reputation ſhould go before." Berkeley's Introduction, &c. ſec. 20.

35. *Note* however, that though words do not immediately ſuggeſt the objects they denote, no more than counters, in gaming, diſcover inſtantaneouſly the ſums of money they ſtand for, or the letters x and y in algebra the unknown quantities they denote; yet it is neceſſary that, when ſtrictly attended to, their connexion with their objects ſhould be diſcernible, otherwiſe the ſentence of which they make a part would be nonſenſical or unintelligible.

36. And

36. And we muſt further remark, that this connexion may be more or leſs perfectly diſtinguiſhed, even when cloſely attended to; it is perfectly ſeen when the object ſignified is immediately diſcernible, without reference to any other object, ſo the ſignification of the words *man, houſe, mountain*, &c.; but it is *imperfect* when the thing ſignified is underſtood only by its relation to ſome object more fully underſtood. Thus, in the propoſition, *one more x is equal to the ſquare root of two*, or in other words, one, with an additional but unknown fraction, would exhibit a number, which multiplied into itſelf would be equal to, or at leaſt approach very nearly to two: here the fraction to be added to *one* is unknown, yet the property it has of exhibiting, when inveſtigated, a number which with *one* would by multiplication produce a reſult very nearly equal to two, renders it, even before this inveſtigation, ſignificant and intelligible, merely through this relation.

37. It is thus alſo that words denoting the *unknown cauſes* of known effects become intelligible; for inſtance, the word *force* which, as underſtood by moſt philoſophers, denotes the unknown cauſe of motion.

Truth conſiſts in the conformity of the received ſignification of words, with the *reality* ſignified and denoted by thoſe words; but *relatively* to the ſpeaker, the words are true when their ſignification is conformable only to the *appearance*, though not to the reality of the things they denote. They are alſo true when taken in the *received*, though different from the exact literal ſenſe, as *your humble ſervant* at the bottom of a letter.

37.* Dr. Watts has well remarked, Logick, part 1. chap. vi. ſec. 3. p. 91, that "when "ſtrong and rooted prejudice hath eſtabliſhed "ſome favourite word or phraſe, and long "uſed it to expreſs ſome miſtaken notion, or "to unite ſome inconſiſtent ideas, then it is "much eaſier to lead the world into truth, "by indulging their fondneſs for a phraſe, "and applying new ideas and notions to their "favourite phraſe; and this is much ſafer "alſo than to waken all their paſſions by re-"jecting both their old words and phraſes, "and introducing all new at once: therefore, "we ſay, *there is heat in the fire, coldneſs in* "*ice*, &c." So we ſay the ſun riſes and ſets; and ſo Chriſt ſpoke of epilepſies, as if cauſed by demons; ſo the Carteſians talk of brutes,

as

as if they were capable of perception, though they held them incapable of any.

38. Words themſelves are often the objects ſignified by other words. This happens, firſt, when it is neceſſary to expreſs the *manner* in which things, or the *relations* of things, are denoted; and, ſecondly, when we conſider the manner in which words form a language: a conſideration which learners of a foreign language find abſolutely neceſſary.

SECTION II.

WORDS CONSIDERED AS TO THE MODE OF SIGNIFYING THINGS OR THE RELATIONS OF THINGS.

Words thus conſidered, are either *poſitive or negative.*

39. *Poſitive,* as thoſe which denote an object, independent of the abſence of another object, as Being, ſubſtance, man, houſe, &c.

40. *Negative,* thoſe which denote the abſence

ſence or denial of ſomething poſitive or every thing: thus, *blindneſs* denotes the abſence of ſight; *quiet*, the abſence of motion; *widowhood*, the ſtate of a woman whoſe huſband is dead; *ignorance*, *darkneſs*, *poverty*, *ideocy*, *nothing*, which laſt denotes the abſence or negation of every thing.

41. *Abſolute* are thoſe which denote an object without any reference to the preſence or abſence of any other object, as man, metal, ox, John, George, &c.; they differ from *poſitive* inaſmuch as theſe do not exclude a reference to other objects; thus *father* includes a reference to child, houſe a reference to habitation; whereas, abſolute words do not denote any reference whatſoever.

42. *Relative* words are thoſe that denote an object inaſmuch as it is connected or related to another object, which is alſo called its *correlative*, or elſe the relation itſelf. Thus *father* denotes a man inaſmuch as he is the cauſe of the exiſtence of a *child*, which is therefore correlative to *father*: ſometimes, however, this word merely refers to age. So *ſon* denotes a perſon inaſmuch as deſcending from a father. So alſo the words *maſter and ſervant*,

ſervant, huſband and wife, king and ſubject, creator and creature, are relative words denoting perſons, inaſmuch as they relate to, or are connected with each other, for all ſuch perſons have alſo proper names that are abſolute.

43. In all theſe caſes, the relative and correlative are concomitantly ſignified, for *father* cannot be underſtood without reference to a *child,* nor *king* without reference to ſubjects, &c.; *antecedant* and *conſequent,* ſuperior and inferior, &c.; other relative words denote the relation itſelf, as *paternity* the relation of a father to a child, *filiation* that of a child to its father, *ſovereignty* and *ſubjection, dominion* and *ſervitude,* &c.

44. Other relatives, as who, which, that, it, they, &c. ſimply recall the objects and words which are to be connected, as mentioned in a diſcourſe; hence the words they refer to are called *antecedents.*

45. *Referential* words (which the ſcholaſtics called connotative) are thoſe whoſe direct ſignification is ſomething abſolute, but which alſo indirectly and obliquely denote a relation of this object to ſomething elſe; thus the

the direct ſignification of the word *book*, is a collection of leaves containing written or printed words, but it evidently, though indirectly, ſuggeſts the uſe for which it was intended, namely, *to be read*. So *houſe* denotes a ſtructure, but it obliquely denotes, *deſigned for habitation*: ſo the words ſimilitude, equality, contiguity, diſtance, cauſation, power, law, government, &c. *Supper* directly denotes a meal, but indirectly the time of that meal; and indeed moſt words, all *adjectives* and *comparatives*, have no correlative, and therefore, as Locke obſerves, their relation is leſs obvious.* The objects denoted by referential words, have no abſolute names together with theſe as relative words have.

Concrete, Abſtract.

46. *Concrete* words are thoſe which denote a perſon or thing as poſſeſſing ſome abſolute quality, property, or modification: thus *philoſopher* denotes a perſon poſſeſſing wiſdom;

* Lib. II. cap. xxv. ſec. 2.

lawyer,

lawyer, a perſon poſſeſſing legal knowledge; ſo *phyſician*, *moraliſt*: *globe* denotes a body poſſeſſing roundneſs. Theſe words *directly* denote the ſubject in which theſe qualities are found; and, indirectly or obliquely, the qualities themſelves. All adjectives are deemed concrete, as they denote the perſon or thing to which they are applicable, though *indeterminately*, as *wiſe*, *good*, &c.

47. Abſtract words are thoſe which denote ſuch parts, properties, modifications, actions, or attributes of an object, as cannot exiſt or be conceived ſeparately, though they may be ſingly attended to and conſidered. The word *head*, or any other phyſical part, is not an abſtract word, becauſe it may exiſt ſeparately from the *body* it belongs to; but the *length*, *breadth*, or depth of a body, are properties which cannot be ſeparated from it, nor even be conceived ſeparately from it, yet they may ſeparately be attended to, and conſidered; for the *length* of a body may be meaſured without at all noticing its breadth or *depth*, as either of theſe may, without attending to the other two; nor whether the body be a *ſtone*, a *metal*, or a *field*, &c. or ſolid, or liquid. So

roundneſs

roundneſs denotes a peculiar modification of the ſhape of a body, which cannot exiſt ſeparate, though the body may exiſt without the modification. So *motion* denotes merely a change of place, without any attention to the ſort of body moved, nor whether the motion be quick or ſlow, upwards or downwards, eaſtwards or weſtwards, &c.; it is evident that ſuch a change, diveſted of all theſe circumſtances, can neither exiſt nor be conceived; yet it may be ſeparately conſidered, and its laws aſſigned without attending to any of theſe circumſtances. So *wiſdom*, which denotes the knowledge and purſuit of the means of producing happineſs, cannot, it is evident, exiſt ſeparately from the being that poſſeſſes it: the ſame may be ſaid of *power*, *juſtice*, *goodneſs*, *clemency*, *wickedneſs*, *cruelty*, and all other moral attributes, when conſidered ſeparately from the beings to which they are attributable. *Human nature*, or *humanity*, *divinity*, *eſſence*, &c. are alſo abſtract words: ſo *animality*, &c. becauſe they denote the eſſential properties only of beings: ſo is *extenſion*, which denotes only one of the properties, to whoſe aggregate the term body is applicable. And hence

hence Locke well remarks, that extenſion is never ſaid to move, though motion is conſtantly attributed to bodies. So *man* may be ſaid to be a ſociable animal; but it were improper to ſay that *human nature* is a ſociable animal, man and body being concrete, and not abſtract terms.

47[a]. Abſtract terms are frequently uſed as abbreviations, as when it is ſaid the falſehood of ſuch a propoſition is apparent, that is, it is apparent that ſuch a propoſition is falſe.

47[b]. Sometimes they are perſonified, as when we ſay *wiſdom* leads to happineſs, *folly* to deſtruction.

Univocal, Equivocal, Analogous.

48. *Univocal* are ſuch words as have the ſame ſignification, when applied to different perſons or things: thus *man* is equally applicable to all male adult individuals of the human ſpecies; ſo the word *being*, when applied to all that exiſt.

49. *Equivocal* are thoſe words which have no common ſignification, though by an abuſe of language

language they are applied to different things. Of this ſort is the word *bull*, when applied to a celeſtial ſign, to an animal, to a blunder, or to a papal conſtitution, things that have no ſort of ſimilitude or analogy to each other. So the word *parliament*, when applied to the parliaments of France and that of England; the former having only a judicial, the latter not a judicial but a legiſlative power. So the word *king*, when a mere ſurname, and when denoting the ſupreme dignity.

50. *Analogy* properly ſignifies the ſimilitude which the *ratio* of two numbers is ſaid to bear to the *ratio* of two other numbers, that is, a proportion.

51. But in other ſciences two ſorts of analogies or ſimilitudes are diſtinguiſhed, the *metaphorical* and the *proportional*. Many words, beſides their direct and original ſignification, are employed, and as it were transferred, by reaſon of ſome *ſimilitude*, to denote, in a ſecondary and derivative ſenſe, things to which the primary and original ſignification of thoſe words bears ſome ſimilitude. Thus *foot* is applied to the lower part of a mountain, in a ſecondary or metaphorical ſenſe, on account of the relation

of

of *inferiority* which that word denotes in its primary ſenſe when applied to the loweſt part of an animal. So the word *head*, which in its original meaning denotes that part of an animal which governs the whole, is alſo to the governing member of a community by reaſon of this ſimilarity; and it is in this manner that human paſſions, and even the parts of the human body, are in Scripture often applied to God.

52. But thoſe words which denote properties or attributes, that with equal propriety are aſcribed to different beings, though poſſeſſed by them ever ſo differently as to *manner*, and ever ſo unequally as to *degree*, are called *proportionally analogous*. Thus the power of ſeeing is with equal propriety attributed to a near-ſighted perſon, and to perſons who ſee at the greateſt diſtance, even ſhould their power of ſeeing be equal to that obtained by uſing the moſt powerful teleſcope. So the locomotive power is aſcribed with equal propriety to animals who move by two legs, or four legs, or without legs, by alternate involution and evolution, as worms and ſerpents, or by fins and wings, as fiſh and birds. Thus

the words *knowledge, wiſdom,* and *goodneſs,* are with equal truth attributable to *man* and to God, but with an infinite difference as to the manner and degree in which the attributes they denote are poſſeſſed, exiſt, or are exerciſed by both.

Singular, Common, Appellative, General.

53. *Singular* words are either the *proper* names of *perſons* or animals, as Peter, John, Bucephalus, &c.; or of cities, mountains, rivers, countries, planets, &c. as London, Paris, Alps, Danube, Spain, Mars, Moon, the Earth, &c.; or any perſon or thing ſpecially demonſtrated by the words *this* or *that,* or any collective word ſpecially denoted, as the *Roman people,* the *Engliſh army,* &c. God is alſo a ſingular name, as it is applicable only to one Being; and indeed, in our and the Jewiſh theology, is a proper name.

Collective words are rendered ſingular by the word *whole,* as the *whole army.*

54. *General* words, otherwiſe called *common* or *apellative,* are names which are indiſcriminately and indifferently applied to numerous objects whether natural or artificial, by reaſon of

of ſome ſimilar properties in all of them, as ſhewn No. 31, as *man, city, mountain, river, army*, &c.

55. Theſe words, properly ſpeaking, are not *abſtract*, but rather *indeterminate*, for they denote no abſtract property, but rather concretely; yet as they may be conſidered and ſpoken of, without reference to any particular perſon or thing to which they are applicable, they have by many been confounded with abſtract terms.* Thus *populous cities* are ſaid *to be the nurſeries of vice*, without thinking either of London, Paris, or Rome, &c. particularly.

Simple, Complex, Collective, and Complicative.

56. Logicians commonly diſtinguiſh terms into *ſimple* and *complex*; by ſimple, they mean ſuch as conſiſt of one word only, as *God, man*; and by complex, ſuch as conſiſt of two, viz. of a ſubſtantive and adjective conjoined, as a *good man*: theſe are convertible and equivalent to propoſitions, as a *man who is good*, and *vice verſa*. In ſome languages ſuch words

* See 1 Locke, p. 120, 124. 2 Locke, 10, 217, 8vo.

often coalesce into one, as Παντοκρατερ in Greek, which ſignifies the *Creator of all things.*

Collective ſubſtantives are thoſe which denote a mere plurality, as *people, multitude.*

57. *Complicative* words are thoſe which denote complex notions, and are abbreviations of phraſes which would otherwiſe be neceſſary to expreſs and develope them. Such are thoſe, firſt, which involve in their ſignification both active and paſſive ſtates of the mind connected with each other, of which ſome inſtances have been already adduced, No. 31, and which I ſhall explain more minutely: for inſtance, the word *deſire* denotes, firſt, an object deſired; ſecondly, the abſence of that object; thirdly, an uneaſineſs (a diſagreeable ſentiment) cauſed by the abſence of that object; fourthly, a tendency (nisus) to obtain that object. This is, the active ſtate of the mind, as the former is the paſſive ſtate.* Similar complications may be found in evolving the ſignification of all other words denot-

* Mem. Berl. 1760, p. 341. Condillac, 1 Gram. 166, 12mo. edit.

ing

ing the paſſions. See Cogan's excellent treatiſe thereon.

So *alms* denotes, firſt, the idea of a perſon in extreme want; ſecondly, the money or other relief granted to that perſon; thirdly, the ſentiment of compaſſion, or of duty to God.

So the word *theft* denotes, as Mr. Locke remarks, firſt, the poſſeſſion of any thing; ſecondly, the concealed change of poſſeſſion of that thing; thirdly, the excluſion of the conſent of the proprietor; fourthly, a ſentiment of diſapprobation of the poſſeſſion thus gained. Among the Spartans, who allowed the ſurreptitious gaining of property, this ſentiment of courſe could not exiſt; therefore this mode of obtaining property could not in their ſtate be called theft.

58. Or, ſecondly, words that denote an action accompanied with particular circumſtances, and the various ſentiments, whether of approbation or condemnation, excited by that action, according to the nature of thoſe circumſtances: thus *homicide*, or the action of killing a man, is, according to the circumſtances that induce it, either juſtifiable (but I

know no ſingle word conveying this complex notion) or it is condemned; and then, according to well known circumſtances, called *murder*, *manſlaughter*, *paricide*, &c.

59. Or, thirdly, words that denote *ſuffering* for any particular cauſe, as *martyrdom*, ſuffering for maintaining religious truth; or *forbearance* for religious reaſons, as *longanimity*.

60. Fourthly, words that denote a plurality of perſons or actions, regularly connected with each other for particular purpoſes, as *army*, *navy*, *parliament*, *jury*, *government*, *triumph*, &c.

61. Fifthly, words that imply an aſſembly or plurality of perſons, with the abſence of any connecting order among them, as *mob*, *anarchy*.

61[b]. Sixthly, words that denote relations, whether natural or factitious, as *father*, *king*, *governor*, *magiſtrate*, a *criminal*, a *traitor*, a *tyrant*, &c.

Univerſal, Particular, Excluſive.

62. *Univerſal* words are thoſe which denote in a general manner, that is, without expreſſing the preciſe number, the whole quantity of perſons or things they are applied to,

or

or the abſence of any quantity: they are collective or diſtributive.

Collective as *all* frequently is, or *univerſally negative* as none.

Diſtributive as every, each, whoſoever,* any.

63. *Particular*, ſo called for denoting greater or leſſer parts of a whole greater number indeterminately, as ſome, moſt, many, ſeveral, few; *not all*, which is equivalent to *ſome* or *many*, ſo *not a few*; *not many* is equivalent to a few, and few denotes *ſome*, though not many.

64. Singularly *excluſive*, as alone.

Specific, Generic.

65. *Specific* words are thoſe that denote thoſe eſſential properties of individuals in which they all agree with, or are ſimilar to each other; thus all *men* reſemble each other in the eſſential properties of animal life, and the faculty of reaſoning. The aggregate of ſuch properties is called a *ſpecies*, and each of theſe properties is called *ſpecific*; thus *gold* denotes the aggregate of the properties of

* Condillac, 2 Gram. 16.

fuſibility, ſuperior gravity, ſuperior malleability and ductility, *yellow colour*, inſolubility in nitric acid, &c. ſolubility in the nitro-muriatic, and various other peculiar properties that may be poſſeſſed by the aggregate of thoſe already known, and therefore called a *ſpecies* of the metallic genus, and thoſe properties ſingly are called *ſpecific*.

66. *Generic* words are thoſe which indicate the ſimilar eſſential properties of different ſpecies: thus there are various ſorts or ſpecies of animals, as birds, beaſts, fiſhes, &c.; and theſe agree in this, that the individuals of each of theſe ſpecies, to ſupport life, muſt (if not in a dormant ſtate) take in nouriſhment at greater or leſſer intervals of time, are (at leaſt to appearance) capable of perception and of ſpontaneous motion. The word *animal* then denotes the aggregate of theſe properties, and is called, when conſidered relatively to the various ſpecies of animals, a *genus*. Thus genera and ſpecies are abridged expreſſions of the collected properties they denote, conſidered independently of the particular individuals that poſſeſs thoſe properties: the generic appertain to a greater number of individuals than

than the ſpecific, for they appertain to individuals of different ſpecies; whereas, the ſpecific relate only to individuals of one ſpecies. Thus *metal* is a genus which comprehends fuſibility as a generic property common, and in ſome reſpects ſimilar, in all metals; but the property of being fuſible at four hundred and twenty degrees of heat is found only in lead; this therefore is a ſpecific property: each ſpecies of metal has a degree of fuſibility peculiar to itſelf, and the ſame may be ſaid of each of the other ſpecific properties. So *body* is a more *general* word than animal, for it denotes the aggregate of thoſe properties in which animals, vegetables, minerals, water, air and light agree, and conſequently is applicable to a greater number of individuals.

67. In every general, generic, or appellative name, its ſignification, or what is called its *comprehenſion*, No. 17, muſt be diſtinguiſhed from its extenſion; that is, the perſons or things to which theſe general names are applied. Thus what is comprehended or denoted by the name *animal*, is applicable to the different ſpecies of animals; but when it is applied to one ſpecies of animals only, then its

its ſignification is limited to that ſingle ſpecies. Thus when it is ſaid *a horſe is an animal*, the meaning is, that animal properties are part of thoſe denoted by the word *horſe*.

Determinate, Indeterminate.

68. *Determinate* are thoſe which determine with preciſion the perſons or things denoted; as, firſt, the proper names of perſons or things, as John, Henry, &c. London, Paris, &c.; ſecondly, names applicable only to one perſon, whether natural or conſtituted, as the king or parliament, the *nobility*, the commons; or one regulation, or inſtitution, or aſſembly, as the government, the monarchy, the law, &c.; thirdly, the words that expreſs collective or diſtributive quantity, as *all*, *each*, *every*, *none*, or *excluſive*, as *alone*, *firſt*, *laſt*.

69. *Indeterminate*, all appellative, general or generic, names are ſo; alſo the words *any*, *ſome*, *many*, *ſeveral*.

Excluſive.

Excluſive words, as *alone*, *firſt*, *laſt*, *beginning*, *end*, denote both a poſitive and a negative; thus *alone* denotes a perſon or thing exiſting unaccompanied;

unaccompanied; *firſt*, an exiſting thing with an excluſion of priority; *laſt*, an excluſion of any ſubſequence; *beginning*, the firſt moment of exiſtence; *end*, the laſt moment of exiſtence, or the negation of continuance.

SECTION III.

OF WORDS CONSIDERED AS RELATIVE TO EACH OTHER.

70. To ſpeak of any thing we muſt give it a name, and this name is what in contradiſtinction to other words is called a *noun*.

71. *Names* that denote objects which either are the ſubjects, or at leaſt are capable of being referred to as the ſubjects, of ſome quality or modification, are called *ſubſtantive* nouns or names.

72. *Names* or nouns that denote any quantity, quality, modification, ſtate, or relation, without any reference to a particular ſubject, but, by their particular grammatical conſtruction, denoting a capacity of being referred to a ſubject, are called *adjectives*.

73. *Pronouns* are words uſed in the place or inſtead of the proper and common names of

of perſons or things; they are either *perſonal, demonſtrative,* or *relative.*

Perſonal denotes the perſon that ſpeaks, as *I,* and is uſed in the place or inſtead of his proper name, or *we* if many ſpeak, or one for many.

—— or the perſon or perſons ſpoken to, as *thou, ye.*

—— or the perſons or things ſpoken of, as *he, they,* when they are preſent; for if abſent, they ſhould firſt be denoted by their proper names or ſome other characteriſtic, and then the pronouns *they* or *that* become *relative.*

Demonſtrative as *this,* or *theſe,* or *thoſe,* denoting ſome perſons or things preſent; for if abſent, or before mentioned, or any way denoted, theſe words become *relative.*

Relative, viz. referring to ſome antecedent, as *who, which, what, that.*

74. A *verb* is a word denoting ſome ſtate of the mind of a perſon concerning himſelf, or any object to exiſt, or to have exiſted, or to exiſt in a future period, as *I love, I grieve, I admire, I ſee it, I hate him,* &c. or ſtating the exiſtence or non-exiſtence, whether paſt, preſent,

e nt, or future of an object, as when it is ſaid *God, exiſts*, the *ſoul exiſts*, &c.; or ſtating an action, or a particular relation betwixt two or more objects, to exiſt either actually or at ſome future period; or not to exiſt, and conſequently the applicability or inapplicability of the words denoting thoſe objects to each other: hence in every caſe a verb denotes not exiſtence as a noun, but *to exiſt*, either ſingly or with ſome additional modification, or by prefixing a negative, it denies ſuch exiſtence.

75. Moſt verbs, beſides denoting ſome perſon or thing to exiſt, are ſo formed as to expreſs ſome action or attribute of the perſon or thing whoſe exiſtence is mentioned, as *I write*, that is, I am writing, *I read*, I am reading, &c.

76. *Prepoſitions* are words that denote the various relations of perſons or things, as *at*, *to*, *from*, *through*, a place; or *whence*, *thence*, *wherefrom*, &c.; or the order of time, as *before*, *after*; *together*, or of union or ſeparation, as *with*, *without*; or oppoſition, as *againſt*; or the efficient cauſe, as *by*, *through*.

77. An *adverb* is an abridged expreſſion of a noun or nouns and a prepoſition, as *wiſely*, that

that is, *with* wiſdom; *ſoon*, that is, in a ſhort time; *leſs*, that is, in a ſmaller quantity; *often*, that is, at ſeveral times; *where*, that is, in which place; *when*, that is, at the time; *then*, at that time, &c. *never*, that is, *not at any time*; *nowhere*, that is, *not at any place*; *neceſſarily*, that is, *with no poſſibility of being otherwiſe*.

78. A *conjunction* is a word that connects, ſeparates, or diſcriminates the different parts of a propoſition, or the different propoſitions of which a diſcourſe is compoſed; *that* is, often a conjunction, and then it denotes *this thing*, *which is*, &c.

SECTION IV.

OF WORDS, RELATIVE TO PROPOSITIONS.

79. We have already ſeen, No. 3, what a propoſition is. The words that form it are called the *ſubject*, the *predicate* or *attribute*, and the *copula* or *connective*; the two firſt are called *terms*, becauſe, in the moſt ſimple and natural order of things, they are the extremes of a propoſition.

80. The *ſubject* of a propoſition is that of which ſomething is affirmed, or denied, or doubted;

doubted; the *predicate*, or *attribute*, is that word or phraſe whoſe ſignification is affirmed or denied of the ſubject, or announced to be doubted of: thus in the propoſition *God is good*, God is the ſubject to which goodneſs is attributed, and *is* the copula which connects both terms. In negative propoſitions, the negative ſign *not* is added to the copula, otherwiſe the ſubject and attribute would not be disjoined, as God *cannot be deceived*, that is, *God is not a Being capable of being deceived*; and it muſt be ſo underſtood, even when apparently remote from the copula, as Mr. Dralloc has well obſerved, unleſs it expreſſly affects the univerſality of the affirmation, as in No. 63. Thus *no man is perfect*, is equivalent to *a perfect man does not exiſt*, or *is not exiſting*; *not a day ſhould paſs in idleneſs*, that is, *a ſingle day ſhould not paſs in idleneſs*, or *that a ſingle day ſhould paſs in idleneſs is not proper*; and hence in an action of detinue, if I plead *that I do not detain your property*, the detainer only is denied, but not the property to be yours.

81. One propoſition is often the ſubject or the attribute of another propoſition; thus *that God cannot deceive us, is a truth which cannot*

be

be denied. What precedes the copula *is*, is the *ſubject*, and what follows is the *predicate. To believe as a Chriſtian, and live as a Pagan, is an inconceivable abſurdity*; here the union of the *belief* of a Chriſtian, and the *life* of a Pagan is the ſubject.

81.* But a word to which a propoſition is annexed is not an attribute; thus in the propoſition *the Sun is in the firmament*, in the firmament is not the predicate, but *is exiſting*, &c.

82. Propoſitions that contain but one ſubject and one predicate, are called *ſimple* propoſitions; if more, they are called compound or complex, or they may happen to be both compound and complex.*

* *Sentence* denotes an entire period, and conſequently a propoſition with all its adjuncts: a *phraſe* denotes a dependant propoſition as part of a ſentence; it alſo often denotes a mode of expreſſion peculiar to a particular language.

CHAPTER III.

CHAPTER III.

OF THE PROPERTIES OF PROPOSITIONS.

83. The properties of propoſitions are either abſolute or relative.

Of the abſolute properties of Propoſitions.

84. The abſolute properties of propoſitions are five; namely, either affirmation or negation, or a participation of both, and truth or falſehood; theſe are called the *qualities* of a propoſition, but the two laſt are called ſecondary qualities.

What is meant by affirmation or negation is ſufficiently underſtood, the participation of both requires to be explained.

85. A *participative* or *amphithetic* propoſition is either an affirmative including a negative, as *he alone perpetrated the fact*, that is, he perpetrated the fact and no other; or it is a negative including an affirmative, which lawyers call a *negative pregnant*, as where a

defendant denies having committed the fact in the *manner and form* in which he is charged with having done it, which implies that he has done it ſome way.

85.* If the ſubject of a propoſition is negative and the predicate alſo, the propoſition is affirmative, as *misfortune is not always uſeleſs*, is equivalent to misfortune is ſometimes uſeful, for in Engliſh two negatives make an affirmative.

SECTION I.

OF THE QUANTITY OF PROPOSITIONS.

86. The extent to which the affirmation or denial expreſſed in a propoſition reaches, is called the *quantity* of the propoſition.

87. The *quantity* of a propoſition is manifeſted by the *quantitative* expreſſions applied to its ſubject, enumerated No. 53, 62, 63, 64; and hence propoſitions are denominated either *univerſal*, *ſingular*, *particular*, or *indefinite*.

88. An *univerſal* propoſition is that in which the ſubject is expreſsly affirmed or denied

nied in its whole *extent*, as well as in its comprehenſion, as *all animals are mortal, no man is perfect*; the exiſtence of a perfect man is denied. The denial may, however, be applied to the univerſality only, as *all men are not juſt*.

89. In univerſal propoſitions two things are to be conſidered; firſt, whether they ſhould be underſtood *literally* and *ſtrictly*, or *looſely*; for, in a popular manner of ſpeaking or writing, a rigorous exactneſs is not always found.

90. And, ſecondly, whether they ſhould be underſtood of the whole extent of the ſubject taken *collectively*, or only diſtributively, that is, of *each* part of which the collection or aggregate conſiſts.

To determine theſe points, the nature of the *predicate* muſt be attended to.

91. And, firſt, if the connexion of the predicate with the ſubject be mathematically or metaphyſically neceſſary, or if the predicate be neceſſarily incompatible in the ſame manner with the ſubject, then the univerſality of the affirmation or denial muſt be underſtood in the *ſtricteſt* ſenſe. Thus, when it is ſaid that all *circles are round*, or that *all*

circles are to each other as the ſquares of their diameters, or that *all cauſes precede their effects*, or that *no triangle is equal to three right angles*, or that *no man is omniſcient, no number infinite*, theſe univerſal propoſitions are true in the ſtricteſt ſenſe.

92. But if the agreement or diſagreement of the predicate and ſubject be only *phyſically* neceſſary, that is, according to the eſtabliſhed courſe of nature, as *all men are mortal, no man can walk on water*, their univerſality is to be taken leſs ſtrictly, for the effects of ſupernatural power muſt be excepted.

93. Laſtly, the univerſality is to be taken *looſely* when the propoſition is *moſt commonly* true, but yet is ſubject to many exceptions, as when it is ſaid that *all women are talkative*, or *no battle is loſt but by the imprudence of the general*, &c.

94. As to the ſecond point we muſt remark, firſt, a univerſal negative propoſition muſt be underſtood *diſtributively*, becauſe the negative deſtroys any agreement betwixt the ſubject and predicate, unleſs the ſubject be a collective ſubſtantive word: thus, *no man can vanquiſh an army*, is true only diſtributively, for

for the meaning is, no *ſingle* man; and it cannot be underſtood collectively, as a collection and ſingularity are repugnant.

No man is perfect, or *no man can ſwim one hundred leagues*; theſe propoſitions muſt be underſtood only diſtributively, though it is equally true that *no collection of men is perfect*, nor can any collection of men ſwim one hundred leagues, for theſe are different propoſitions from the former.

95. Remark alſo, that in our language if the predicate alſo be negative, the propoſition is affirmative: thus *no man is immortal*, is equivalent to *all men are mortal*, and muſt be taken as affirmative propoſitions are to be taken.

96. With reſpect to univerſal affirmative propoſitions, we muſt obſerve whether they are rendered univerſal by the collective word *all*, or by diſtributive words; if by the word *all*, then the following diſtinctions occur.

97. Firſt, if the predicate of the propoſition reſults from, or ſuppoſes a collection, then the propoſition muſt be taken *collectively* and not diſtributively: thus, *all the members formed a committee*, muſt be underſtood collectively, for it is the collection of the members,

or all the members taken together, that formed the *committee*, and evidently each member could not be a committee, though *all* were.

98. Secondly, if the predicate receives any alteration when the propoſition is taken in the *collective* ſenſe, in the properties it has in the *diſtributive ſenſe*, it may be taken in either of the two ſenſes; but then it may be true in one of theſe ſenſes, and falſe in the other, or it may be abſtractedly true with more or leſs probability of its falſehood, or more or leſs facility in given circumſtances. Thus the aſſertion that *all the arrows in a quiver are eaſily frangible*, is true in the diſtributive ſenſe, but falſe in the collective; if it were that *all the arrows in a quiver are difficultly frangible*, it would be true in the collective ſenſe, and falſe in the diſtributive; if it were ſimply that *all the arrows in a quiver were frangible*, this is certainly true, even in the collective ſenſe, but with conſiderable difficulty.

99. Thirdly, if the predicate is *no way altered* by a collection, then whether its connexion with the ſubject be eſſential, neceſſary, or contingent, the propoſition may be taken either collectively or diſtributively, as *all men*

are

are mortal; all Europe mourned the death of Lewis XVI; all creatures had a beginning.

100. Again, if an affirmative propoſition be rendered univerſal by the diſtributive words *every* or *each*, it cannot be underſtood in a collective ſenſe, nor conſequently allow of the ſubſtitution of the word *all* for *every* or *each*, for theſe words are eſſentially diſtributive and allow no other conſtruction.

101. But if the predicate of ſuch a propoſition is *no way altered* by a collection, then a collective ſenſe, though not expreſſed by it, is evidently deducible from it. Thus ſince *every man is mortal*, it evidently *follows* that *all men are mortal*; if *every ſheep in a field is white*, it is plain that all the ſheep are white; if *every creature has had a beginning*, it is plain that all creatures have had a beginning.

102. But if the predicate receives *any alteration* by a collection, then the collective ſenſe (though poſſibly alſo true or approximating to truth,) cannot, ſtrictly ſpeaking, be inferred from the diſtributive propoſition: thus, *though every arrow in a quiver is frangible*, it does not follow that *all of them collectively taken are frangible*. So though it is

certain that *every judge is fallible*, it cannot be inferred that the *twelve judges collectively* are equally, that is, in the ſame degree *fallible*, for their opinion approaches more nearly to the true opinion, at leaſt the contrary happens very rarely.

103. The *predicate* of an affirmative propoſition, even though the propoſition be univerſal, is always taken particularly; for though abſtractedly conſidered, it is *often* more extenſive than the ſubject of the propoſition, and applicable to various other ſubjects; yet when connected with the ſubject of a propoſition, its ſignification is limited to that ſubject. Thus, when it is ſaid that *every man is an animal*, though the word *animal*, abſtractedly conſidered, is applicable to many other ſpecies beſides the human, as birds, beaſts, &c. yet in this propoſition it is limited to the human ſpecies and denotes no other; and hence is ſaid to be particular, denoting only a *part* of thoſe objects to which it were otherwiſe applicable.

104. But in negative univerſal propoſitions, the predicate is always taken *generally*, that is, in its whole extent. Thus, when it is ſaid that

that *no ſtone is metal*, the meaning is, that it is not a metal of any kind.

105. Yet all the properties of the predicate are not denied, but merely the *ſpecific* and *peculiar* properties; for inſtance, hardneſs and fuſibility are properties of metals, which are not denied to be poſſeſſed by ſtones.

Dr. Campbel, in his Philoſophy of Rhetoric, Vol. II. p. 386, has well marked:

When the diſcourſe is of	*two*; when it is of *ſeveral.*	
Collectively -	Both -	All.
Diſtributively -	Each -	Every.
Indiſcriminately -	Either -	Any.
Excluſively - -	Neither -	None.
Relatively and Interrogatively	Whether -	Which.

106. A *ſingular* propoſition is that whoſe ſubject is conſidered as a ſingle object; as, firſt, the proper names of perſons, John, Paul, &c.; or of things, as London, Paris, aqua regia, &c.; or the ſun, the moon, the earth, the planet *Mars*, &c.; the city of Paris, the kingdom of England, &c.

Or, ſecondly, words to which the demonſtrative pronouns *this* or *that* are affixed, as *this* or *that* man, or the perſonal pronouns *I*, *thou*, *he*; or, thirdly, a collective word in the ſingular number, as the *army*, the garriſon, &c.;

&c.; even when it is ſaid *the garriſon was numerous*, for ſuch aggregates are conſidered as units; or, fourthly, a perſon or thing particularly denoted morally one or evidently ſingle, as *the man who firſt aſcended in a balloon muſt have been very intrepid*; *the deluge*, *the ark*, &c.

107. An evident mark of a ſingular propoſition is, that it cannot be converted into an univerſal propoſition: hence the propoſition, *a truly great man is he who is maſter of himſelf*, is not a ſingular but an univerſal, for it is equivalent to *every truly great man is maſter of himſelf*; but *the Romans conquered the Gauls* is a ſingular propoſition, for *the Romans* are conſidered as *one body*, and we cannot convert this propoſition into an univerſal, *all the Romans* or *every Roman*, nor into a particular, as *ſome Romans*, &c.

108. A particular propoſition is that in which the ſubject is expreſſly taken only in part of its extent, by reaſon of the particulariſing words *ſome*, many, *ſeveral*, *moſt*, *almoſt all*, or few, *ſcarce any*, as *ſome men are wiſe*, moſt men *are ignorant*, &c.

109. An *indefinite* propoſition is that in which

which the extent of the ſubject is not determined either by the ſigns of univerſality, nor of particularity, but merely by the nature of its connexion with the predicate; if the connexion be eſſential, or neceſſary, or conſtant, it is plain the ſubject is taken *univerſally*, as no part of its extent can be deſtitute of that which eſſentially, neceſſarily, or conſtantly accompanies it; but if the connexion be contingent, then a part of the ſubject may be connected with the predicate and a part not, and conſequently the ſubject is taken partially or *particularly*: ſo alſo if the ſubject be neceſſarily conſidered as *an u it*, the indefinite propoſition muſt be conſidered as *ſingular*.

110. Thus in the propoſition *men are mortal*, it is plain the ſubject *men*, and the predicate *mortal*, are neceſſarily connected; the ſubject then is taken in its whole extent, and conſequently the propoſition is equivalent to the univerſal propoſition *all men are mortal*. So *mankind is ſubject to many evils*, is equivalent to *all men are ſubject to many evils*, though *mankind* and *all men* are ſynonimous. So *a ſhip that ſails round the world is expoſed to many dangers*, is to be taken *univerſally*, and is equivalent

valent to every ſhip, &c. for expoſure to dangers neceſſarily attend ſuch a voyage. *The murderers of Cæſar were ungrateful*, equivalent to an univerſal *all the murderers of Cæſar*, &c. for ingratitude neceſſarily accompanied their crime.

Merchants are ſubject to bankruptcy, equivalent to an univerſal propoſition, for liability to failure neceſſarily attends hazardous undertakings.

A truly great man is maſter of himſelf, equivalent to every great man, &c.

The inhabitants of London, &c. may die on one day, equivalent to all the inhabitants, &c. which though in the higheſt degree improbable, even though an earthquake ſhould happen, yet is abſolutely true.

III. *Merchants are induſtrious*, equivalent to a particular propoſition, for the connexion is not neceſſary though common and uſual, therefore it is equivalent to *moſt* or *many merchants*, &c.

The inhabitants of great cities are uncommonly wicked, to be taken particularly, being equivalent to *very many inhabitants*, &c. *Commonly* here ſignifies *for the moſt part*, and not *frequently*,

frequently, for otherwiſe the ſenſe would be that all the inhabitants of great cities were frequently wicked.

The Italians excel in painting and muſic, to be taken particularly for *many* Italians; but *the Romans conquered the Gauls* is a ſingular propoſition, becauſe the Romans here are conſidered as one body.

There are wicked men in all countries, equivalent to *ſome* or *many*; men in all countries are wicked.

Few men eſcaped the yellow fever, &c.; this is a particular propoſition, as few expreſſly denotes a part and is not an indefinite propoſition.

The propoſition John xix. *the ſoldiers platted a crown of thorns and put it on his head*; theſe actions were contingent, and therefore, as it is probable there were many ſoldiers, it may be ſuppoſed that only a few of them were employed in platting and impoſing this crown.

The injured are not apt to forgive, that is, few or not many *injured forgive*.

Wiſdom leads to happineſs, folly to miſery.

III.* In negative propoſitions, either the con-

connexion of the ſubject and predicate is denied, as *no man will be ſaved*, or the univerſality only of the propoſition is denied, *as not all men will be ſaved*, or *all men will not be ſaved*, or *every man will not be ſaved*. So Matthew, vii. 21, not every one that ſaith to me Lord, Lord, ſhall enter into the kingdom of heaven; but ſome are not excluded, but rather implied.

SECTION II.

OF THE PROPERTIES OF PROPOSITIONS RELATIVELY TO EACH OTHER: THESE ARE, OPPOSITION, INCOMPATIBILITY, DISPARITY, CONVERSION, AND EQUIVALENCE.

Of Oppoſition, Incompatibility, Diſparity.

112. The oppoſition of propoſitions properly conſiſts in this, that the one directly denies in whole, or in part, what the other affirms, the ſubject and predicate remaining the ſame, except one of them is a ſingular propoſition: hence diſagreement in *quality*, that

that is, in affirmation and denial, is eſſential to oppoſition properly ſo called.

113. Four ſorts of oppoſition are commonly diſtinguiſhed; the *contradictory*, when the propoſitions are oppoſite to each other both in quantity and quality; the *contrary*, when both are univerſal; the *ſub-contrary*, when both are particular; the *ſubaltern*, which I ſhould rather call *ſubordinate*, when both agree in quality and diſagree only in quantity; however, properly ſpeaking, theſe are not oppoſite but merely unequal. Theſe definitions are alſo imperfect, or erroneous, as ſhall preſently be ſhewn.

114. With reſpect to *quantity*, the oppoſition of propoſitions is ſuſceptible of ten different combinations; for both may be *univerſal* or both *particular*, or *both ſingular*, or both *indefinite*.

Or one *univerſal* and the other *particular*; or one *univerſal* and the other *ſingular*; or one *univerſal* and the other *indefinite*.

Or one may be *particular* and the other *ſingular*; or one *particular* and the other *indefinite*.

Or one may be *ſingular* and the other *indefinite*.

Firſt Caſe.—Both Univerſal.

115. As *all men are mortal, no man is mortal. All men are white, no man is white.*

116. When the connexion of the predicate with the ſubject is eſſential, neceſſary, or conſtant, the affirmative is *true*, and the negative *falſe*, as in the firſt example; but when the connexion is contingent, then *both* the affirmative and negative *are falſe*, as in the ſecond example. The univerſal negative, *no* or *none*, does not wholly ſet aſide the univerſal affirmative *all*, for *ſome* is intermediate between them.

117. When the ſubject and predicate are conſtantly *diſconnected*, then the negative is true and the affirmative falſe: thus, *no man is neceſſarily wicked, all men are neceſſarily wicked.*

118. If the diſconnexion is contingent, both are falſe; as, *no war is juſt, all wars are juſt*

119. *Not all men are juſt*, or *all men are not juſt*, are not univerſal propoſitions, as already ſaid, No. 111.*

120. The ſcholaſtics called the above propoſitions, No. 115, 117, *contrary*, as each is univerſal

univerſal, and they diſagree only in quality; all allow their peculiar characteriſtic to be, that both cannot be true, but both may be falſe, as in the ſecond example, No. 115; or one may be true and the other falſe, as No. 115, firſt example, and No. 117.

121. But their definition is faulty, for the characteriſtic property equally attends propoſitions, of which one only is univerſal, and the other particular. Thus *all men are pious*, ſome *men are not pious*; here the ſecond propoſition is particular; the firſt is evidently falſe, and the ſecond alſo, if only *one* man is pious, for *ſome* indicates a plurality. Again, *no man is neceſſarily wicked*, is true; *ſome men are neceſſarily wicked*, is falſe.

122. Then contrary propoſitions are more accurately defined to be thoſe whereof one affirms or denies more than is neceſſary to falſify the other. Thus, in the example 118, *no war is juſt*, is falſified if *one war is juſt*; therefore the propoſition *all wars are juſt*, affirms more than is neceſſary to falſify the negative oppoſed to it.

Second Caſe. Both particular.

123. Firſt, ſome wars are juſt, moſt wars are not juſt, or unjuſt.

Second, ſome men are mortal, ſome men are not mortal.

Third, ſome men are omniſcient, ſome men are not omniſcient.

124. When the connexion of the ſubject and predicate is neceſſary or conſtant, the affirmative muſt be true, and the negative falſe, as in the ſecond example.

125. When the connexion is contingent, as in the firſt example, both are true.

126. So if the diſconnexion be eſſential, neceſſary, or conſtant, the negative is true, as in the third example, and the affirmative falſe.

127. In the propoſition *few men are omniſcient*, I think the negation affects only the quantity of the propoſition and not the copula; and conſequently the propoſition is not negative, but merely in appearance: hence the propoſitions *ſome wars are juſt, few wars are juſt*, do not oppoſe each other, for the laſt is tantamount to *not many wars are juſt*.

128. The

128. The oppoſition of particular propoſitions to each other is called *ſub-contrary*; their diſtinctive character is, that both may be true, and then they are not oppoſite; or one may be true, and the other falſe, but both cannot be falſe: for if both were falſe, then the univerſal propoſition that compriſes one of them would be falſe, and if ſo, the other muſt be true, otherwiſe contradictory propoſitions would be falſe. Thus *ſome men are white, ſome men are not white,* cannot both be falſe, otherwiſe the propoſitions, for inſtance all men are white, and ſome are not white, would both be falſe.

Third Caſe. Both ſingular.

129. If both refer to the ſame thing, or to the ſame perſon (whether natural, politic, or fictitious,) in the ſame circumſtances of time and place, and in the ſame reſpect, then one muſt be true and the other falſe, as *Alexander conquered Perſia, Alexander did not conquer Perſia; the moon governs the ſeaſons, the moon does not govern the ſeaſons; the whole army was infected with the plague,* &c.

130. But if they relate to different cir-

cumſtances of time or place, both may be true.

Thus *Hannibal defeated the Romans, Hannibal did not defeat the Romans,* for he was defeated at Zama.

131. Propoſitions oppoſed to each other, as in No. 129, are called *contradictory*; their diſtinguiſhing character is, that both cannot be true nor both falſe, but one muſt be true and the other falſe.

Fourth Caſe. Both indefinite.

132. *Firſt, men are mortal, men are not mortal.*

Second, merchants are induſtrious, merchants are not induſtrious.

Third, the injured are not apt to forgive, the injured are apt to forgive.

Fourth, the cruel are not beloved, the cruel are beloved.

Fifth, men are not omniſcient, men are omniſcient.

133 If the connexion of the ſubject with the predicate is neceſſary, the affirmative muſt be true and the negative falſe, as in the firſt example.

134. If

134. If the connexion be not neceſſary, but uſual and common, then the indefinite propoſitions muſt be conſidered as particular, with the addition of *moſt* or *many*; and the affirmative is true, and the negative falſe, as *moſt merchants are induſtrious, moſt merchants are not induſtrious.*

135. If the diſconnexion is neceſſary, as in the fifth example, then the negative muſt be true, and the affirmative falſe, as in the fifth example. If the diſconnexion is not without exception, yet moſt uſual and common, then the indefinite propoſitions muſt be conſidered as particular; with the addition of *moſt* or *many*, then the negative is true, and the affirmative falſe: thus in the third example, *moſt injured perſons are diſinclined to forgive* (that is, not inclined,) is true, *moſt injured perſons are apt to forgive* is falſe. If theſe indefinite propoſitions were reſolved into univerſal ones, as *no injured man is apt to forgive, all injured men are apt to forgive*, then they would be contrary and both falſe.

136. But it is a general rule in conſtruction, to falſify as little of the text as poſſible. *Maledicta expoſitio quæ corrumpit textum.*

Fifth Caſe. One univerſal and one particular.

137. *Firſt, all men are mortal, ſome men are not mortal.*

Second, no man is omniſcient, ſome men are omniſcient.

Third, all battles have been attended with bloodſhed, ſome battles have not been attended with bloodſhed.

Fourth, one battle has not been attended with bloodſhed.

Fifth, all merchants are induſtrious, ſome merchants are not induſtrious.

Sixth, no man is wiſe, ſome man is wiſe, or one man is wiſe.

Seventh, all beings are eternal.

Eighth, no being is eternal, ſome beings are eternal.

138. When an univerſal propoſition is oppoſed by a particular propoſition, the oppoſition has generally been deemed *contradictory*. But as it is a maxim univerſally allowed, that two contradictory propoſitions cannot in any caſe be both true, or both falſe, but that one is *neceſſarily* true, and the other *neceſſarily* falſe; and ſince, nevertheleſs, caſes happen in which

which it is poſſible that both the univerſal and the particular propoſition may be falſe, it is plain that the definition is inaccurate, and that a diſtinction muſt be taken.

139. Firſtly. If the *connexion* of the predicate with the ſubject be *neceſſary*, as in the firſt example, then the univerſal affirmative *muſt* be true, and the particular negative falſe: theſe then are contradictory.

140. So if the *diſconnexion* is neceſſary, the univerſal negative *muſt* be true, as in the ſecond example, and the particular affirmative falſe.

141. Secondly. If the connexion of the predicate with the ſubject be *contingent*, as in the third example, both propoſitions may be falſe; the univerſal affirmative if there be *one* exception, and the particular negative if there be *but one* exception; for *ſome*, joined to a plural ſubſtantive, denotes at leaſt *two*; and of a battle of the kind mentioned in the fourth example, we have one inſtance in Italy. But the word *ſome* joined to a ſubſtantive in the ſingular number, as in the ſixth example, denotes only *one* perſon or thing. In the ſeventh example, the firſt propoſition is falſe, the

ſecond true: in the eighth example both are falſe; if the ſecond propoſition had been *one being is eternal*, then the propoſitions would be contradictory; but as it is ſtated, the ſecond affirms more than is neceſſary to falſify the firſt.

142. So if the *diſconnexion* be contingent, both may, by poſſibility, be falſe, though in general one is true and the other falſe, as in the fifth example; for there the univerſal affirmative is certainly falſe, and the particular negative is not neceſſarily true, for if *but one* merchant were induſtrious, it would be falſe, for *ſome* implies at leaſt more than *one*.

143. Hence the true definition of contradictory propoſitions is, that one exactly denies the ſame identical point that the other affirms, and nothing more or leſs than is ſufficient to falſify the affirmative; or converſely, if the affirmative aſſerts no more or leſs than is required to falſify the negative; and the reaſon is, that the diſtinctive character of contradictory propoſitions conſiſts in this, that one *muſt* be true and the other falſe, upon this ground, that it is *impoſſible to be and not to be*. Now this ground would not apply if any thing more

more were denied by one propoſition than is affirmed by the other, or affirmed by the one than is denied by the other; as in ſuch caſe, the exceſs would be ſuperfluous, not being contradicted.

144. Thus the propoſitions *all men are wiſe, ſome men are not wiſe,* are not contradictory, for the ſecond denies more than is neceſſary to falſify the firſt, as the exiſtence of one ſingle *unwiſe* man would be ſufficient to falſify it. So the propoſitions *all men are wiſe, no man is wiſe,* are not contradictory, though the ſecond exactly denies what the firſt affirms, becauſe it does ſo, and alſo more than is neceſſary to falſify it; therefore both may be, and in this caſe really are, falſe; the truth of both is impoſſible.

Sixth Caſe. One univerſal and one ſingular.

145. *Firſt, no General has been always ſucceſsful, Marlborough was always ſucceſsful.*

Second, all governments are imperfect, one government is not imperfect; theſe propoſitions are evidently contradictory, therefore one muſt be true, and the other falſe.

Third,

Third, all beings are eternal, one being is not eternal; the firſt falſe, the ſecond true.

Seventh Caſe. One univerſal and the other indefinite.

146. Firſt, men ſhould avoid all dangers, no man ſhould avoid all dangers.

Second, ſtates have been ruined by inteſtine commotions, no ſtate has been ruined by inteſtine commotions.

147. *Men* being taken generally and abſolutely in the firſt example, without any reference to age, rank, or profeſſion, muſt be underſtood univerſally; and in that ſenſe the affirmative is falſe, for the dangers reſulting from reſiſtance to enemies ſhould not always be avoided, nor even *probable* dangers, as thoſe of navigation, &c. in common life. The negative is alſo falſe for ſome men, as the old, the infirm, the unarmed, &c. ſhould avoid all dangers; the propoſitions are then *contrary*, and both falſe.

148. In the ſecond example, the affirmative is to be taken *particularly*, and is true; for the ſtates of Greece, which in fact formed one federal body, were ruined by their inteſtine

teſtine broils, and ſo were thoſe of Holland lately; but England was not ruined in conſequence of the grand rebellion, nor France by the wars of the League; nor lately, by the revolts of the Vendeans, Lyons, Marſeilles, &c.; the negative is falſe, and the propoſition *contrary*, as more is denied than was affirmed.

149. Hence if an indefinite propoſition is reducible to an *univerſal*, this caſe will coincide with the firſt, and ſhould be conſidered accordingly.

If reducible to a *particular*, it will agree with the fifth caſe.

If reducible to a *ſingular*, it will agree with the ſixth caſe.

Eighth Caſe. One particular and one ſingular.

150. *Firſt, ſome Romans were virtuous, Clodius was not virtuous.*

151. Theſe propoſitions are never oppoſite to each other; for as the particular affirms or denies only a part of the ſubject, the ſingular muſt relate to another part, or be comprehended in the other, and both may be true.

Ninth

Ninth Caſe. One particular and the other indefinite.

152. *Firſt, ſtates have been ruined by civil wars, ſome ſtates have not been ruined by civil wars.*

Second, the induſtrious are ſucceſsful, ſome induſtrious men are not ſucceſsful.

153. The indefinite propoſition is either reducible to an *univerſal*, and then the oppoſition coincides with that in the fifth caſe; or it is reducible to a *particular*, as in both the examples, and then it coincides with the ſecond caſe: in the firſt example, add *many ſtates*, &c.; and in the ſecond example, add *moſt induſtrious*, &c.

Tenth Caſe. One ſingular and the other indefinite.

154. If the indefinite be reducible to an *univerſal*, it coincides with the ſixth caſe.

If it be reducible to a *ſingular*, it will agree with the third caſe.

If reducible to a *particular*, it will coincide with the eighth caſe; and in fact there is no oppoſition.

Of Subaltern oppoſition.

155. This is improperly called an oppoſition, for both propoſitions are affirmative, or both are negative, they differ only in quantity: thus,

Firſt, all men are liable to miſtakes, ſome men are liable to miſtakes.

Second, all men are wiſe, ſome men are wiſe, or *Socrates was wiſe.*

Third, no man is omniſcient, ſome men are not omniſcient.

Fourth, no war is juſt, ſome wars (or many, or moſt,) *are unjuſt.*

On this ſpecies of oppoſition we may remark;

156. Firſt, if the univerſal propoſition be true, the ſubordinate, whether particular or ſingular, muſt be true alſo, as in the firſt and ſecond examples; for an univerſal truth is only an abridged expreſſion of every particular truth, and therefore is ſaid to contain them.

157. But if the univerſal propoſition be falſe, it cannot be inferred that the ſubordinate is falſe; for a falſe univerſal propoſition does not include, but rather falſely excludes all

all other ſubordinate propoſitions; theſe therefore are independent of it, and may be true, as in the ſecond and fourth examples.

158. Second, if the connexion or diſconnexion of the ſubject and predicate be eſſential, neceſſary, or conſtant, then the univerſal affirmative in the one caſe, and the univerſal negative in the other, are true, as in the firſt and third examples.

159. But if the connexion or diſconnexion be contingent, then the univerſal, whether affirmative or negative, is falſe, as in the ſecond and fourth examples.

160. *Note*, if in any caſe the nature of the connexion between the ſubject and predicate of either propoſition be doubtful, the oppoſition muſt alſo be doubtful.

In general we may remark, that from the *truth of an univerſal propoſition*, we may infer the truth of every particular propoſition compriſed in the univerſal; but from the *falſehood of an univerſal propoſition*, we cannot infer the falſehood of its ſubordinate particular propoſition.

Again, from the truth of a particular propoſition, we cannot infer the truth of an univerſal;

verſal; but from the falſehood of a particular propoſition, we may infer the falſehood of the univerſal: thus if it be falſe that *ſome men are capable of committing every crime*, it is falſe that *all men are capable of committing every crime.*

Of Incompatibility.

161. Propoſitions are incompatible with each other when the ſubject of each propoſition being the ſame, either expreſſly, implicitly, or equivalently, the predicate of the one is inconſiſtent with that of the other; and conſequently both cannot be true, but both may be falſe, or one true and the other falſe; as,

Firſt, all men are white, all men are black.

Second, all things have had a beginning, the world is eternal.

Third, laſt ſummer was warm (that is, at an average heated to 65°, or above, of Fahrenheit;) *laſt ſummer was cold* (that is, at an average below 65° Fahrenheit.)

Five thouſand men remained in the city, three thouſand men only remained in the city.

Fifth, all bodies move, all bodies are at reſt.

162. In-

162. Incompatibility, properly ſo called, is always reducible to oppoſition, either of contrariety or of contradiction, and to be reaſoned upon in the ſame manner.

163. To form this reduction, the ſubject of each propoſition, if apparently different, as in the fourth example, muſt be ſhewn to be the ſame. And the predicates, if vague, muſt be reduced to a preciſe determinate ſenſe, as in the third example, otherwiſe one could not oppoſe the other, not being *ad idem*.

164. If the connexion of one or other of the predicates *disjunctively*, with the ſubject of the propoſition, be eſſential, neceſſary, or conſtant, as in the fifth example, then the oppoſition is that of *contrariety*; and both may be falſe, as in that example, for ſome bodies may move, and ſome be at reſt.

165. If the connexion of *only one of the predicates* with the ſubject is eſſential, neceſſary, or conſtant, as in the ſecond example, then the oppoſition is that of contradiction, and conſequently one of the propoſitions muſt be true and the other falſe: eternal is tantamount to *no beginning*. But if it be deemed

to

to denote alſo no end, the oppoſition will be that of contrariety; but the reſult will be the ſame, for one of the propoſitions is true and the other falſe. Some, it is true, have aſſerted that the world could have been created from all eternity; if ſo, ſome things might have been eternal and ſome not: but the falſehood of this opinion ſhall elſewhere be demonſtrated.

166. If the connexion of the predicates with the ſubject be contingent, as in the firſt, third, and fourth examples, then the oppoſition is that of contrariety, and both propoſitions may be falſe, as in the firſt example, or one may be true and the other falſe, as in the third and fourth examples; or in the fourth example both may be falſe, for perhaps four thouſand men remained in the city, or perhaps none at all remained in it.

In the ſecond example the ſubject, though not apparently, yet is in reality the ſame, the *world* being compriſed in *all things*.

In the fourth example, to evince the identity of the ſubjects, both propoſitions muſt be altered into others equivalent to them: thus *the number that remained in the city was five*

thouſand, the number that remained in the city was only three thouſand. If the word only were omitted, the propoſitions would not be incompatible, but merely different.

167. The next rule I ſhall lay down in the words of Mr. Marſh, from whom it is taken.

" If a poſition, of which the truth is ad-
" mitted, is urged againſt another poſition,
" the truth of which is the ſubject of inquiry,
" the former cannot be admitted as a neceſ-
" ſary contradiction, and therefore a confu-
" tation of the latter, unleſs the two poſitions
" are wholly *irreconcilable*. To prevent there-
" fore the former from being conſidered as a
" confutation of the latter, it is not neceſſary
" to prove that the two poſitions *muſt* have
" the ſame meaning, eſpecially if one of them
" is expreſſed with ambiguity and admits of
" various explanations."*

Of Diſparity.

168. Diſparate propoſitions are thoſe whoſe *ſubjects* are different and irrelative, and hence the truth or falſehood of the one, is uncon-

* See Marſh's defence of the illuſtration of his hypotheſis on the origin of the Goſpels, p. 30, in the note.

nected

nected with and independent of that of the other.

Equivalency.

169. Propoſitions are ſaid to be equivalent to each other, when both, though expreſſed in different words, convey the ſame meaning.

SECTION III.

OF THE MODE OF CONTRADICTION OF SIMPLE PROPOSITIONS.

170. In many controverſies, much wrangling often ariſes from doubts whether one aſſertion is contradictory or contrary to another, or whether one is conſiſtent with the other. What amounts to a contradiction to an *univerſal* propoſition is ſufficiently clear; but with reſpect to particular and indefinite propoſitions, the following obſervations may be uſeful.

Particular.

171. If the particular propoſition be in the

ſingular number, it muſt be contradicted by an univerſal, as in No. 141.

172. But if the particular propoſition be in the *plural number*, we muſt conſider the nature of the connexion or diſconnexion of the ſubject and predicate.

173. For if the *connexion* or *diſconnexion* be contingent, as *ſome wars are juſt*, then to form a contradiction, we muſt add the words *except one*, or words to that amount, as *not more than one war is juſt*; for *ſome* implies at leaſt *two*, and conſequently cannot be contradicted but by excluding any plurality. If you ſay *no war is juſt*, or *not one one war is juſt*, you deny it is true the firſt propoſition; but then you deny more than was affirmed by that propoſition, and therefore your negative is not preciſe. If the particular propoſition be negative, as *many wars are unjuſt*, to contradict it you muſt ſay *all wars but one are juſt*: it is, however, of little conſequence in this caſe, to know whether the propoſitions are contradictory or contrary, for even if barely contrary, one of them is true and the other falſe.

174. If the connexion or diſconnexion of the ſubject with the predicate be eſſential, neceſſary,

ceſſary, or conſtant, then no addition need be made to the univerſal propoſition, as *ſome men are mortal, no man is mortal.*

Indefinite.

175. To contradict an indefinite propoſition, we muſt conſider whether it be equivalent to an univerſal, ſingular, or particular propoſition, and then treat it accordingly.

SECTION IV.

OF THE CONVERSION OF PROPOSITIONS.

176. The converſion of propoſitions is generally thought an uſeleſs operation, yet in controverſies it is often found of great importance, as may be ſeen by the dextrous uſe made of it by Dr. Hamilton, the preſent biſhop of Oſſory, in his celebrated demonſtration of the exiſtence and attributes of God *a priori.*

177. The converſion of a propoſition conſiſts in a new arrangement of, or ſome acceſſion to, its terms, the ſenſe of the original remaining unaltered.

 178. When

178. When the new arrangement conſiſts in a mere change of the ſubject into the predicate, and of the predicate into the ſubject, it is called a *ſimple converſion*, as *ſome kings are tyrants* is converted into, *ſome tyrants are kings: no vicious man is happy*, is converted into *no happy man is vicious.*

179. If in the new arrangement, the quantity of the derivative propoſition is expreſſed, which quantity was barely underſtood, but not expreſſed in the original propoſition, this is called a *particular* converſion, and by the ſcholaſtics *converſio per accidens:* as *all men are animals*, then *ſome animals are men*; here the word *ſome* is added, but makes no change in the ſenſe.

180. The general rule is, that the quantity expreſſed or plainly implied in the derivative, ſhall be the ſame as that expreſſed or implied in the original propoſition.

181. If in the new arrangement, the ſubject of the original propoſition becoming the predicate of the derivative, and the predicate becoming the ſubject, and to each of them the negative *ſign not* is affixed (unleſs already included in the other,) this is called converſion

ſion by contrapoſition. Thus Dr. Hamilton, in the above-mentioned diſſertation, p. 142, argues: *whatever is contingent muſt have had a cauſe*, therefore *what had not a cauſe was not contingent: thus every man is mortal*, is converted into *no immortal being*, (that is, *no being that is immortal)* is a man, or *a being that is immortal is not a man*; all theſe are affirmative by reaſon of the two negatives.

182. Hence we ſee that converſion is a ſpecies of reaſoning; for if the ſubject be identified, or any way connected with the predicate, as far as that connexion extends, the predicate muſt alſo be connected with the ſubject; and therefore, as it is affirmed of the ſubject, the ſubject may be affirmed of as much of it, as the connexion extends to. Thus if *A* be connected with *B*, then B muſt alſo be connected with A; but if B denotes a ſeries of ſimilar indeed but unconnected lines, then A will be connected only with that particular line with which it is in contact. See No. 103.

183. Then ſince the ſenſe of the derivative propoſition is exactly the ſame as that of the original, both as to quantity and quality, it

Quidquid est Contingens est requirens Causam
Quidquid non est Contingens est non requirens Causam
aliquid non requirens Causam est non Contingens

follows that if the original be true, the derivative muſt alſo be true, and *vice verſa*; in a word, if the original be true, falſe, probable, doubtful, poſſible, impoſſible, neceſſary, or contingent, affirmative, or negative, univerſal, ſingular, or particular, the derivative muſt exactly correſpond with it, that is, it muſt be true, falſe, probable, &c.

184. As a propoſition is ſaid to be the converſe of another, when its ſubject is the predicate of the other, ſo an argument is ſaid to be the converſe of another, when its antecedent is the concluſion of the other, and its concluſion the antecedent of the other.

185. In geometry, a propoſition is ſaid to be the *converſe of another*; when after inferring a concluſion from a ſuppoſition, the concluſion is itſelf ſuppoſed, and the original ſuppoſition is inferred from it.

CHAPTER

CHAPTER IV.

OF COMPOUND PROPOSITIONS.

SECTION I.

OF COMPOUND PROPOSITIONS.

186. A *compound* propoſition is that which hath two or more ſubjects, or one ſubject and two or more predicates, either expreſſly affirmed to be both true or to be both falſe, or that one is true and the other falſe, and neither of which can be conſidered as incidental to the other.

Hence a compound propoſition conſiſts of, or is reſolvable into, two or more propoſitions, forming one ſentence.

Of theſe there are ten kinds; firſt, *conjunctive*; ſecond, *disjunctive*; third, *comparative*; fourth, *aſſimilative*; fifth, *cauſal*; ſixth, *diſcretive*; ſeventh, *conditional*; eighth, *excluſive*; ninth, *exceptive*; tenth, *definitive*.

Firſt,

Firſt, Conjunctive.

187. *Conjunctive* propoſitions are thoſe whoſe ſubjects or attributes, or both, are jointly connected by affirmative, or diſconnected by negative terms, and conſequently it is reſolvable into as many partial propoſitions.

Firſt, thus *Cæſar and Pompey were excellent generals*, that is, Cæſar was an excellent general, and Pompey was an excellent general; here the *ſubjects* are joined, and the propoſition affirmative.

Second, ſo *Cæſar was an excellent and fortunate general*; here the predicates or attributes are conjoined.

Third, ſo *neither Cæſar nor Pompey loved their country*; here the ſubjects are joined by the negative terms, for the negation falls on the verb; for the propoſition is equivalent to *Cæſar did not love his country*, and *Pompey did not love his country*.

Fourth, ſo *Pompey was vain and unfortunate*; here the predicates are joined. *Cæſar was neither raſh nor cruel*; here the predicates are joined by a negative term, for it is equivalent

to

to two propoſitions, *Cæſar was not raſh, and Cæſar was not cruel.*

Fifth, ſo *riches and power enable men to do much good and much evil*; here two ſubjects and two predicates are conjoined, and the propoſition is equivalent to four propoſitions, if the ſubjects be taken *diſtributively*; or to two propoſitions, if the ſubjects be taken *collectively*, that is, the *aggregates of riches and power.*

188. When two ſubjects are conjoined, but the predicate is applicable only to the union or aggregate of both, the propoſition is not compound, for it cannot be reſolved into two propoſitions.

So *to believe the doctrines of Chriſtianity, and live according to thoſe of Epicurus, is very extraordinary*; here the predicate is inapplicable to each ſubject ſeparately taken, and applicable only to the union of both. But if in this caſe there were two predicates, as *very extraordinary and contradictory*, then the propoſition would be reſolvable into two, and conſequently compound.

189. A * conjunctive propoſition is

* See Dr. Watts, p. 151.

falſe,

falſe, * if any of the propoſitions into which it is reſolvable be falſe: thus the propoſition *virtue and riches are neceſſary to ſalvation* is falſe, becauſe riches are not neceſſary.

Hence a conjunctive propoſition is contradicted by denying the connexion, or affirming a connexion if the propoſition be negative: thus, in the above caſe, the *union of virtue and riches is not neceſſary to ſalvation*; and in the firſt example, neither Cæſar nor Pompey were excellent generals; and in the ſecond, *Cæſar was not an excellent nor a fortunate general*; and in the third, *both Cæſar and Pompey loved their country* are contradictory.

Second, Disjunctive.

190. A disjunctive propoſition is that which contains either one ſubject, and two or more predicates oppoſed to each other, or two or more ſubjects oppoſed to each other, with one predicate, or two or more predicates oppoſed to each other; † it is reſolvable into as many branches or oppoſite propoſitions as the ſenſe

* So ruled by Parker, chief juſtice, in the caſe of Buller and Meliſſy, 1 Lofft, 185. 1 Strange, 76, &c.

† See Watts.

will

will admit. One or other is aſſerted to be true, but which of them, is left undetermined.

Firſt, ſo *all wars are either juſt or unjuſt*, reſolved into *all wars are juſt*, or *all wars are unjuſt*; here the predicates are oppoſed to each other.

Second, ſo *either Cæſar or Pompey could conquer the Parthians*, reſolved into, *Cæſar could conquer the Parthians*, or *Pompey could conquer the Parthians*; here are two ſubjects and one predicate.

Third, ſo *favourable or unfavourable judgments ariſe either from ignorance or from partiality, or from prejudice*; here are two ſubjects and three predicates, and reſolvable into ſix propoſitions. However, it may be ſaid, that the firſt disjunctive *or*, is equivalent to the *conjunctive and*; but this does not always happen, as *all the judgments of the revolutionary tribunal, whether juſt or unjuſt, aroſe either from ignorance, or partiality, or prejudice.*

191. A *disjunctive propoſition* is falſe, if all its branches or the propoſitions it is reſolvable into are falſe, as *either the Jewiſh or the Mahometan religion is true*; but it is true, if any of its branches

branches is true, * as either the *Mahometan or Jewiſh, or Chriſtian religion is true.*

191.[b] Hence a disjunctive propoſition is contradicted by *denying* the disjunction if affirmed, or *affirming* a conjunction if the diſjunctive propoſition be negative.

Third, Comparative.

192. A comparative propoſition is that which either explicitly or implicitly contains a compariſon, and conſequently two judgments aſſerting that one thing is better, or a leſſer evil than another thing; or if both be evil, that one is a leſſer evil than the other, or that one ſtate, &c. is more eligible than another, even if the other contain no ground of eligibility or any other compariſon.

Firſt, ſo *Cæſar was a better general than Pompey*, is reſolvable into two propoſitions, *Pompey was a good general, Cæſar was a better.*

Second, ſo *death is in ſome caſes preferable to life*, that is, *life is in ſome caſes an evil, and death is often a leſſer evil.*

Third, ſo *any religion is preferable to atheiſm*,

* So Parker, chief juſtice, 1 Strange, 76.

that

that is, *atheiſm is an opinion, but any religious opinion is preferable or is a better opinion.*

193. A comparative propoſition is falſe, if the higher degree of compariſon be falſe, as *the Mahometan religion is preferable to the Chriſtian*, that is, *the Chriſtian religion contains ſome truths, but the Mahometan more.*

194. So alſo, ſtrictly ſpeaking, if the poſitive degree be not found in both branches, or if both imply a falſehood; yet in common language this ſtrictneſs is not obſerved; for whatever poſſeſſes any quality in a high degree, poſſeſſes more of it than what contains none at all: thus,

Firſt, *the Chriſtian religion is better than the Mahometan*, ſtrictly ſpeaking, is falſe, for it implies that the Mahometan religion is good. So alſo if it were ſaid, *the Chriſtian is truer than the Mahometan religion*, for *truth* admits of no degrees; we muſt then ſay, *the Chriſtian is preferable to the Mahometan religion.*

Second, ſo *Pompey was a worſe general than Cæſar*, is, ſtrictly ſpeaking, falſe, for it ſuppoſes Cæſar to be a *bad general*; we muſt then ſay, *Pompey was a leſs able general than Cæſar.*

195. *Note*,

195. *Note*, the word better frequently denotes not a greater good, but a leſſer evil, as when it is ſaid it is *better to live with a dragon than with a ſcold.*

195.[b] A comparative propoſition is contradicted, if deſtitute of foundation, by reducing the comparative to the poſitive degree. Thus in the firſt and ſecond example, No. 194, the Chriſtian religion is true, and the Mahometan falſe; but if the compariſon has any foundation, the propoſition is to be affirmed or denied, as the caſe may require, in the uſual way.

Fourth, Aſſimilative, (uſually called relative.)

196. An *aſſimilative* propoſition conſiſts of two branches, connected by terms expreſſing a ſimilitude either of quality or quantity in the ſubjects or predicates.

So *ſuch as is your company, ſuch will be your character*; *in as far as a book is uſeful, in ſo far it is eſtimable*; *no poet ſo celebrated as Homer.*

197. An aſſimilative propoſition is contradicted by denying the ſimilitude.

Fifth,

Fifth, Cauſal.

198. A *cauſal* propoſition conſiſts alſo of two branches connected by terms aſſerting, that one is, or is not, the cauſe of the other; the aſſertion is often indicated by the words *being, through, for, as.*

So *Cæſar defeated Pompey becauſe his army was better diſciplined.*

So *Cæſar warred on Pompey, that or to the end, that he might remain ſole ſovereign of Rome. As Livy died before the reign of Nero, he could not write his hiſtory.*

Firſt, ſo *money is coveted, it being the inſtrument of procuring pleaſure,* that is, *becauſe* it is the inſtrument, &c.

Second, ſo *Chriſt died for the ſalvation of mankind*; *for* denotes the cauſe, then the two branches of the propoſition are Chriſt died, and the ſalvation of mankind was the cauſe of his death.

199. A cauſal propoſition is falſe, if either or both branches are falſe, or even if both were true, if the cauſe be falſely aſſigned, for what is falſe cannot be a cauſe: thus *all events are*

neceſſary, becauſe they were decreed by fate; here both branches are falſe.

So *all events are neceſſary, becauſe they were foreſeen*; here the firſt branch is falſe, in the ſecond the fact is true, but the cauſe is falſely aſſigned.

So *Tamerlane was born under the conſtellation of Scorpius, therefore he was cruel*; here both branches are true, but the cauſe is falſely aſſigned.

199.[b] A cauſal propoſition is contradicted by denying the cauſation, as *Chriſt did not die for the ſalvation of mankind*; or *Chriſt died, but the ſalvation of mankind was not the cauſe of his death*; it might alſo be contradicted by denying that *Chriſt died*, for of courſe the cauſation is deſtroyed.

Sixth, Diſcretives or Adverſatives.

200. A *diſcretive* propoſition conſiſts of two branches, connected with, yet diſtinguiſhed from, and contraſted with each other, by reaſon of ſome oppoſition explicitly or implicitly contained in them, or denied by one of them.

Firſt, thus *Hannibal was a great general,* BUT *finally unfortunate,* OR YET *finally unfortunate,*

tunate, or THOUGH *finally unfortunate,* or NOTWITHSTANDING *that he was finally unfortunate,* or GRANTING *that he was finally unfortunate,* or NEVERTHELESS *an unfortunate general.*

Second, ſo *Cæſar was* NOT ONLY *a great,* BUT *alſo a fortunate general*; in all theſe propoſitions the ability and the fortunes of the generals are contraſted.

Third, ſo *Brutus,* SO FAR *from being grateful, murdered his benefactor*; here gratitude and murder are contraſted, not only was he not grateful but murdered his benefactor.

Fourth, ſo *Brutus was unfortunate,* BUT *he deſerved to be ſo*; here any oppoſition between the merits of Brutus and his misfortunes is denied.

Fifth, the ſucceſs of armies does not ariſe from their numbers merely, but from their numbers, diſcipline, valour, and the ſkill of their generals.

201. Diſcretive propoſitions are falſe, if either or both branches be falſe; and conſequently they are contradicted by aſſerting the falſehood of either branch, or deſtroying the oppoſition, as Brutus was unfortunate, and deſerved to be ſo.

Seventh, Conditional.

202. A *conditional* propoſition exhibits two branches connected with each other by a condition annexed to one of them, and of this branch the other is aſſerted to be the conſequence; it is then a ſpecies of reaſoning of which the condition is the antecedent; ſo IF *Cæſar had not been murdered, he would have overturned the Parthian empire.*

So PROVIDED *you obey the laws, you will not be puniſhed.*

203. A conditional propoſition is falſe, if the conſequence be not ſtrictly deducible from the ſuppoſition; therefore to contradict it, we muſt deny the neceſſity of the inference: thus *if Cæſar had not been murdered, it does not neceſſarily follow that he would have overturned the Parthian empire,* or yet *he would not have overturned the Parthian empire*; but it would be true if the deduction were juſt, though both branches were falſe, as *if God were unjuſt, men would be unhappy.*

Eighth, Excluſive.

204. An *excluſive* propoſition is that which aſſerts

aſſerts that the predicate or predicates ſo agree with the ſubject, as to agree with that ſubject only and with no other: hence it is reſolvable into two propoſitions, one affirming the agreement of the predicate with the ſubject, and the other denying its agreement with any other perſon or thing; or if the predicates be numerous into numerous propoſitions, there are two ſubjects, one fully and the other compendiouſly expreſſed by the words *only*, or *alone*, or *beſides*.

Thus *George the Third* ALONE *is the monarch of England*; here George the Third is aſſerted to be the monarch of England, and that *no other* perſon is monarch of England.

So *George the Third is the* ONLY *monarch of England*; here George the Third is aſſerted to be the monarch of England, and the word *only* excludes all others from the monarchy of England, and from all participation of that monarchy; ſo that this propoſition differs only in grammatical form from the former, but the purport of both is exactly the ſame. *

So

* Dr. Blair, vol. i. p. 251. A difference betwixt *alone* and *only*: *only* imports that there is no other of the ſame kind;

So *Adam was the only man created*, that is, Adam was created and *no other* man was created, which is exactly tantamount to *Adam alone was created*, or *no man except Adam was created*.

So *the Platonicks were the* ONLY *ſect of Philoſophers who maintained the immortality of the ſoul*; here it is aſſerted that the Platonicks maintained, &c. and that no other ſect of philoſophers maintained it.

So *homicide is lawful* ONLY *when committed through the neceſſity of ſelf defence*; that is, *the neceſſity of ſelf-defence renders homicide lawful, when that neceſſity exiſts*; it is unlawful *when that neceſſity does not exiſt*; which is equivalent to ſaying the neceſſity of ſelf-defence *alone*, renders homicide lawful.

So *God* ALONE *is omnipotent and omniſcient*, is reſolvable into God is omnipotent, and God

kind; *alone* imports being unaccompanied by any other. There is a difference betwixt theſe phraſes, *virtue only makes us happy*, and *virtue alone makes us happy*; the firſt imports that nothing elſe can make us happy, the ſecond imports that virtue *by itſelf*, or unaccompanied by other advantages, is ſufficient to do it.

is omniſcient, and no other Being is omnipotent, and no other Being is omniſcient.

205. Excluſive propoſitions are falſe, if the predicate does not agree with the ſubject, or agrees with more ſubjects than one; it is contradicted by denying the excluſion, as *George the Third is not the only king of England.*

Ninth, Exceptives.

206. An exceptive propoſition is that which aſſerts the agreement of the predicate or predicates with two or more ſubjects, and not with any other ſubjects; and hence it is reſolvable into two or more propoſitions, ſome affirmative and others negative, like the excluſive propoſitions: the exception is always a part of ſome whole.

So *the Greeks and Romans were the* ONLY *learned nations*, that is, the Greeks were a learned nation and the Romans alſo; and *beſides* them, or *except* them, no other nation was learned; for the word only does not here ſtand for ſingly but for *excluſively*, and there are two ſubjects.

207. Hence the term *alone* is not ſuited to exceptive propoſitions, for it is properly ap-

plied to only *one* ſubject; for it denotes *all*, (that is entirely) *one*, from the German *allein nil niſi unum*, or *omnino unum*.

Thus we cannot ſay *the Greeks and Romans* ALONE *were learned nations*, for that would be equivalent to ſaying *the Greeks* ALONE, *and the Romans* ALONE, *were learned nations*; as the conjunction renders the propoſition reſolvable into ſeparate partial propoſitions, and thus the propoſition would be abſurd and even contradictory; nor would it be leſs abſurd, were the Greek and Roman nations ſuppoſed to be collectively taken, for then it would imply that the collection of both *alone*, was learned.

Again, *ye ſhall all periſh* UNLESS *ye repent*; that is, ye who repent ſhall not periſh, ye who do not repent ſhall periſh.

But *there is no omnipotent Being* EXCEPT *or* BESIDES *God*, is an exclu ve propoſition and not exceptive, for it is equivalent to God alone is an omnipotent Being, and there is but one ſubject.

An exceptive propoſition is falſe, if the ſubject does not agree with its predicate, or if the predicate agrees with other ſubjects.

It

It is contradicted by denying the exception.

Tenth, Definitives.

208. *Definitive* propoſitions are thoſe that mark not only the matter announced, but alſo its time, place, order, or circumſtances, and conſequently is reſolvable into two or more partial propoſitions.

Thus *Cæſar was put to death in the ſeven hundred and tenth year of Rome, by thoſe whoſe lives he ſpared when conquered.*

A definitive propoſition is falſe, if any of the partial propoſitions into which it may be reſolved be falſe.

209. This propoſition would be falſe, if Cæſar had not been put to death in the ſeven hundred and tenth year of Rome, or not by thoſe whoſe lives he ſpared, or who were not conquered.

Hence we ſee there are many queſtions which cannot be anſwered by a ſimple affirmation or negation, that is, by *yes* or *no*; ſimple propoſitions only can thus be anſwered. See P. R. 216.

CHAPTER V.

OF COMPLEX AND MODAL PROPOSITIONS.

SECTION I.

210. A complex propoſition is that whoſe ſubject or predicate is again repeated, either expreſſly or conſtructively; expreſſly by the pronouns *who*, *which*, *that*, *thoſe*, *they*, &c. or by other referential terms, as *while*, *being*, *of*, *where*; or conſtructively, by an adjective, or even a ſubſtantive, annexed to the predicate or ſubject, the term ſo repeated being itſelf rendered the ſubject of another propoſition, or reſolvable into the ſubject of another propoſition involved in the firſt, or dependent on ſome part thereof.

Examples.

Firſt, a man who obeys God loves his neighbour.

Second, a pious man loves his neighbour.

Third, the city of Babylon was once powerful.

Fourth,

Fourth, Philip of Macedon formed an army which was well diſciplined.

Fifth, the human mind is a ſimple ſubſtance.

Sixth, Alexander, whoſe army was invincible, intended to conquer the weſt of Europe.

Seventh, men being mortal, but whoſe ſouls are immortal, ſhould endeavour to be happy in their future ſtate.

Eighth, God who is merciful, is alſo juſt.

Ninth, men having all the ſame common parent, ought to love each other.

Tenth, the aſtronomical ſyſtem which ſuppoſed the ſun to move round the earth, which was held by Ptolemy, is now abandoned.

Eleventh, the opinion of Epicurus touching the origin of the world is falſe.

Twelfth, what men love, that they ſeek.

Thirteenth, where men are happy, there they ſhould remain.

Fourteenth, while men are young, they ſhould learn what they may afterwards want to know.

Fifteenth, I maintain the earth to be round.

Sixteenth, Copernicus maintained the earth to be round.

Seventeenth,

Seventeenth, the doctrine which taught the ſovereign good to conſiſt in animal pleaſures, which was maintained by Epicurus, is unworthy of a philoſopher.

Eighteenth, he who does the will of my father who is in heaven, ſhall enter into the kingdom of heaven.

Nineteenth, Cherea killed a tyrant.

211. In the firſt example, the *ſubject* is repeated and referred to by the pronoun *who*, the *man who* denoting the *man*, *which* man loves God: the reference is expreſs.

In the ſecond example, the reference is alſo to the ſubject of the propoſition; but tacitly, being implied by adding the adjective *pious*, for it is equivalent to a man, *which man is pious*: the pronoun *who* includes that repetition.

212. In the third example, the reference is alſo to the ſubject; but *tacitly*, by adding the ſubſtantive *Babylon*, for it is equivalent to the *city which was called Babylon*.

213. In the fourth example, the reference is to the predicate *an army*, and it is expreſs: there is alſo a reference to the ſubject, as in the third example.

In

In the fifth example, there is an implied reference to the predicate by the annexation of the adjective *ſimple.*

In the ſixth example, the reference is to the ſubject and alſo expreſs; *whoſe* is equivalent to *of which Alexander.*

214. In the ſeventh example, the reference is implied in the word *being*, and the propoſition is alſo cauſal; for the meaning is, *men becauſe they are mortal,* and a ſecond expreſs reference is made in the diſcretive propoſition *but whoſe ſouls.*

In the ninth example, the reference is expreſſed in the word *having*, and is alſo cauſal, for it ſignifies *becauſe they have: other participles* are alſo referential, and form part of a complex propoſition.

In the eleventh example, the *opinion of Epicurus* evidently denotes the opinion held by Epicurus, or *which was holden by Epicurus.*

In the twelfth example, the reference is made by the word *what*; thus *men ſeek that thing which thing they love.*

215. In the thirteenth example, the reference is made by the word *where*, as *men ſhould remain in that place, in which place they are happy.*

In

In the fourteenth example, the firſt reference is made by the word *while*; *thus men while they are young*, that is, *at that time in which they are young*; the ſecond by the word *what*.

216. In moſt of the above caſes, the reference is made to the ſubject or predicate, or ſome words connected with them, but the word repeated is not always the ſubject of another propoſition, as we may ſee in the ſixth example, where the relative term *whoſe* repeats implicitly the antecedent Alexander, but in the genitive caſe: this repetition may equally be made in other caſes; and hence I have added in the definition, *or dependent on ſome part thereof.*

217. A reference is alſo often made to a *whole propoſition*, as in the fifteenth and ſixteenth examples: thus in the fifteenth, the ſenſe is, the *earth is round, this I maintain*; for though the phraſe the *earth to be round* is in the infinitive mood, yet in the mind of the ſpeaker it is evidently an affirmation, as appears by the words *I maintain*, which is only a declaration of the affirmation of the ſpeaker.

But in the ſixteenth example, the affirmation is contained in the firſt part of the propoſition

ſition *Copernicus maintained*, and not in the laſt: the firſt might be true, though the earth were not round.

218. The propoſition to which, or to the ſubject or predicate of which the reference is made, is called the *principal*, being that whoſe aſſertion is principally intended; and that which refers to it, either expreſſly or conſtructively, is called *incidental*. In the ſeventeenth example, there are two incidental propoſitions; the firſt refers to the ſubject of the principal propoſition, viz. the *doctrine*, and the ſecond refers to that ſubject connected with the incidental propoſition and explained by it; for the doctrine maintained by Epicurus was, that the ſovereign good conſiſted in animal pleaſures; this whole phraſe is then referred to by the ſecond *which*, and not the *doctrine* merely. In the eighteenth example, *he* (the man) is the ſubject of the firſt incidental propoſition; and to a part of this propoſition, viz. *of my father*, the ſecond incidental propoſition, *who is in heaven*, is referred.

219. The referential words *who*, *which*, &c. and the incidental propoſitions which they form, are either *reſtrictive* of the generality or ambiguity

ambiguity of the term, or propoſition they refer to, or merely *explicative and declarative* of ſome property thereof.

Thus, in the firſt example, *the man who loves God*, who loves God reſtrains the generality of the word *man*, which it refers to, for *every* man does not love his neighbour, but only the man who loves God. So the implied reference in the ſecond example is reſtrictive; not every man, but a man who is pious.

So, in the third example, the implied reference is reſtrictive.

In the fourth example, both references are explicative, for the firſt implied reference declares who that Philip was, and the ſecond expreſs reference declares his army to have been well diſciplined.

So in the fifth, the implied reference is explicative.

So in the ſixth, ſeventh, eighth, and ninth; in the ſixth, the army is referred to by the genitive caſe and its property, viz. invincibility is declared.

In the tenth, the firſt incidental propoſition is *reſtrictive*, for it is a *particular* ſyſtem that

was

was rejected; but the ſecond is *declarative*, as it merely relates that ſyſtem to have been held by Ptolemy.

In the eleventh, there are two incidental propoſitions, the firſt implied in the word *of*,* and the ſecond in the word *touching*; the firſt is clearly *reſtrictive*, the ſecond is explicative, for it is tantamount to *which related to the origin of the world.*

In the twelfth, the incidental propoſition is *reſtrictive*, for the generality of the word *thing*, which is referred to, is already reſtricted by the demonſtrative *that.*

So alſo in the thirteenth and fourteenth, for the ſame reaſon.

The fifteenth example is only *verbally* complex, but not in reality; for it denotes no more than a mere affirmation by the ſpeaker.

In the ſixteenth, *Copernicus maintained*, is the principal propoſition, the remainder is incidental; the reference is left underſtood, but may be expreſſed thus, *maintained an opinion, which is, the earth is round*: the reference is explicative.

In the ſeventeenth and eighteenth, the firſt

* Log. Port. Roy. 186.

reference is *reſtrictive*, the ſecond *explicative*; perhaps alſo it may be *reſtrictive* in the eighteenth, to diſtinguiſh his heavenly from his earthly father.

In the nineteenth, the reference is implied in the complicative word *tyrant*, and is explicative, for it is equivalent to *Cherea killed a man who was a tyrant*, namely, Caligula, and the word *tyrant* is itſelf a compendious expreſſion of many more propoſitions.

SECTION II.

220. A *modal propoſition* is that in which a reference is made to the *copula*; and when it involves both a principal and an incidental propoſition, it is a ſpecies of complex propoſitions.

It is called *modal* becauſe it mentions the mode, means, or manner aſcribed to the verb which forms the copula of the principal propoſition, or to the attribute identified with the copula; which manner is either fully expreſſed, or compendiouſly by an adverb, reſolvable into an incidental propoſition: or, more ſhortly, a modal propoſition is that which

which expreſſes the manner in which the predicate is aſſerted to agree or diſagree with the ſubject.

Firſt, this war was improperly conducted.

Second, the French revolution was effected by means equally cruel and impolitic.

Third, Cæſar was baſely killed by thoſe whoſe lives he had ſpared.

Fourth, this war is neceſſary.

Fifth, I am certain this war is neceſſary.

Sixth, I deem this war neceſſary.

Seventh, I think it probable that this war is neceſſary.

Eighth, it is certain that this war is juſt.

In the firſt example, the mode is expreſſed adverbially, and refers to the predicate identified with the verb; this is commonly a participle.

In the ſecond, the mode is fully and not adverbially expreſſed, the referential term *which* is left underſtood, the ſenſe being, by means *which were equally cruel and impolitic*; the reference is here alſo to the predicate *effected.*

In the third, there are are two incidental propoſitions, the firſt modal, the mode being

adverbially expreſſed, the ſenſe being *in a manner which was baſe*; the ſecond is expreſſly incidental but not modal. Hence this and ſuch like propoſitions are reſolvable into three diſtinct propoſitions; the firſt, or principal, expreſſing the fact; the ſecond, the manner; and the third, the authors, cauſes, or inſtruments.

In the fourth propoſition the mode is implied in the predicate, for it denotes that the exiſtence of the war is neceſſary, and refers to the copula, and thus differs from this propoſition *the war is juſt*; for in this the *quality* and not the mode is denoted, and the predicate agrees with the ſubject without any particular reference to exiſtence, which forms the copula: however, it is certain that this modal propoſition is *complex*, notwithſtanding the interpoſition of the copula *and*, for the ſenſe is, *this war exiſts, and its exiſtence is neceſſary*; it is therefore reſolvable into a *conjunctive* propoſition, but the pronoun *its* refers it to the former, being equivalent to *of which, the exiſtence of which is neceſſary*.

The fifth propoſition appears to me to be equivalent to the foregoing, for it is a bare affirmation

affirmation of the neceſſity of the war, and no aſſertion can be ſtronger than an abſolute affirmation: if the phraſe *I am certain* were a diſtinct propoſition, it might be denied; but who can deny that *I am certain*, or convinced of that, of which I declare myſelf convinced? This alſo applies to the ſixth.

The ſeventh example is modal and complex, for it is equivalent to this, *it is probable that this war is neceſſary*; or, more ſimply, *this war is neceſſary, which neceſſity is capable of proof:* neceſſity is affirmed to be its mode of exiſtence, and *this* neceſſity is aſſerted to be capable of proof.

The eighth example is not modal but merely complex, for its morality and not its mode of exiſtence is referred to; for it is equivalent to *this war is juſt and its juſtice is certain:* the firſt is the principal propoſition, and the ſecond is incidental.

221. To judge of the truth or falſehood of complex propoſitions, four caſes ſhould be diſtinguiſhed. For, firſt, the principal may be true, and the incidental alſo.

Or, ſecond, the principal may be true, and the incidental falſe.

Or, third, the principal may be falſe, and the incidental true.

Or, fourth, the principal may be falſe, and the incidental alſo.

222. The firſt and fourth caſes admit of no difficulty.

But, in the ſecond caſe, we muſt obſerve whether the incidental be *explicative* or *reſtrictive*; if it be *explicative* and falſe, yet the complex, in the opinion of moſt logicians,* is true, as *Alexander the ſon of Cyrus conquered Perſia*; but if it be *reſtrictive* and falſe, then the complex is falſe, as a *figure which has three ſides has four angles.*

In the third caſe, the complex is undoubtedly falſe, as *Alexander the ſon of Philip conquered Italy.*

SECTION III.

OF THE DISTINCTIONS OF COMPLEX FROM COMPOUND PROPOSITIONS.

223. To mark their difference may at firſt ſight be deemed of little or no importance;

* Watts, Part II. chap. ii. ſec. 5. Port. Roy. ninth edition, p. 188.

it

it is nevertheleſs of ſome, ſince it is certain that a compound propoſition is falſe, if either of the propoſitions it involves is falſe, though the other be true, and conſequently it cannot be affirmed upon oath; but it is otherwiſe in mere complex propoſitions, for in the opinion of many logicians, theſe may be true, and conſequently affirmed on oath, though one of the propoſitions involved in them, namely, the incidental, may be falſe.

224. We have already ſeen, No. 215, that in complex propoſitions, there is a reference to, and a repetition of, ſomewhat that preceded either explicitly or by implication; but one of the branches of compound propoſitions alſo often refers to the other, which may occaſion ſome difficulty with regard to the claſs to which they belong: to remove this, we muſt remark, that the reference peculiar to complex propoſitions is merely *grammatical*; and that which exiſts between the branches of compound propoſitions, when any does exiſt, is *logical*; one branch being affirmed, or denied to be, deducible from the other. Yet it may happen that both a grammatical and a logical reference ſhould exiſt between

the two branches, and in that caſe the entire propoſition may be deemed both compound and complex.

224.[b] In complex propoſitions, two things have been remarked; firſt, a grammatical reference, either expreſs or implied, to an antecedent, which is tacitly repeated by ſome pronoun or otherwiſe; and, ſecondly, the diſtinction of a principal and incidental propoſition. The firſt property alone appears to me to be eſſential; for the exiſtence of a propoſition which may be regarded as *incidental*, that is, not neceſſary to the intelligence of the principal propoſition, but merely collateral to it, is in many caſes impoſſible; namely, in all the caſes in which the reference is reſtrictive, as may be ſeen by recurring to ſuch caſes and omitting the references.

From Conjunctives.

225. Theſe frequently have no grammatical reference to each other, but ſometimes they have, *as this war is juſt and* IT *cannot be avoided:* in this caſe they are at once both complex and conjunctive.

From

From Disjunctives.

226. Theſe are always compound.

From Conditional.

227. A conditional propoſition has frequently a grammatical reference, and then it may be conſidered as complex, though it contains no branch that can be called incidental.

228. But often alſo it contains no ſuch reference, and then it cannot be conſidered as complex, having no property in common with complex propoſitions.

229. Again, if the expreſs or implied reference of a complex propoſition be *reſtrictive*, it may be reſolved into a conditional propoſition to which it is perfectly equivalent.

230. But if the reference of a complex propoſition be *explicative*, it cannot be reſolved into a conditional propoſition, and differs from it in every reſpect.

Examples.

Firſt, if a figure have three ſides, *it* muſt have three angles.

Second, if a king is beloved by his people, he

he is happy: the grammatical reference is expreſs.

Third, a three-ſided figure muſt have three angles.

Fourth, a king beloved by his people is happy: here the grammatical reference is implied.

Fifth, a figure which has three ſides muſt have three angles.

Sixth, a king who is beloved by his people is happy: here the reference is expreſs; and theſe propoſitions are equivalent reſpectively, and completely prove the aſſertion, No. 227.

Seventh, if Chriſt had not ſuffered, Jeruſalem would not have been deſtroyed: here the conditional propoſition contains no grammatical reference, and cannot be conſidered as complex, as ſaid, No. 228.

In the third and fourth examples, the references are *reſtrictive*; and hence theſe complex propoſitions are convertible into the conditional propoſitions in the firſt and ſecond examples, which proves No. 229.

Eighth, *the ſyſtem which ſuppoſed the ſun to move round the earth is now rejected:* here the reference being explicative, the complex propoſition

propoſition cannot be reſolved into a conditional, as ſaid, No. 230.

231. The following propoſitions, however, deſerve attention, as they might be deemed objections to this aſſertion.

Firſt, *God who is merciful, is alſo juſt*; cannot be reſolved into *if God is merciful, he is alſo juſt*; for though this is in reality true, yet his juſtice cannot be inferred from his mercy: the inference is not logical, and, thus conſidered, the propoſition is falſe.

Second, *where men are happy, there they ſhould remain*; the ſenſe is, *men ſhould remain in that particular place, in which place they are happy*: this is reſolvable into, *if men are happy in any particular place, in that place they ſhould remain*; but the reference is plainly reſtrictive, being limited to a particular place.

From comparative Propoſitions.

232. A complex propoſition differs from a comparative in this, that though a comparative like a complex may be reſolved into two propoſitions, one of which has even a grammatical reference to the other, for it repeats with an addition the word it refers to, yet,

yet, contrarily to the nature of a complex propoſition, the branch which contains the reference is the principal, and that which is abſolute is merely fulcimental: thus *Cæſar was a better general than Pompey*, is reſolvable into *Pompey* was a good general, and Cæſar was a general *more good*, or *was a general who was more good.*

From Cauſal Propoſitions.

233. Theſe expreſſly or impliedly contain two propoſitions, one of which refers to the other, yet the reference is principally logical, aſſerting one to be the cauſe of the other; however, as logical and grammatical references do not oppoſe each other, a propoſition may be at once both cauſal and complex, as in the following example.

Pilate condemned Chriſt becauſe HE *was timid*, or *through timidity. Brutus conſpired againſt Cæſar to reſtore republican freedom:* here the propoſition is purely compound and cauſal, there being no grammatical reference.

From Diſcretives.

234. Theſe are always complex, for one branch

branch always has a grammatical reference to a foregoing, as has been well explained by Mr. Tooke; but they differ from thoſe that are purely complex, by including another reference, namely, that of continuance, diſcontinuance, diſparity, or oppoſition.

From Aſſimilative.

235. Theſe are the reverſe of the laſt mentioned; they always have a grammatical reference to each other, and therefore are in reality complex; but they alſo expreſs a reference of ſimilitude which diſtinguiſhes them from the merely complex.

From Excluſive and Exceptive.

236. Theſe alſo are both complex and compound; compound, as one branch affirms and the other denies; and complex, as each refers to the other.

SECTION IV.

OF IDENTIC PROPOSITIONS.

237. An *identic* propoſition is that in which the predicate is a repetition of the term expreſſing the ſubject, as *good is good*; or which affirms or denies the ſame thing in the ſame or exactly ſynonimous words, as *whatever is, is.*

238. Dr. Campbell, 1 Phil. Rhet. 105, well remarks, that as mathematical propoſitions are reducible to an identity with the preceding propoſitions from which they are deduced, and theſe in their turn are ſhewn to be identified with others, and thus progreſſively to the primitive axioms, it may be difficult to conceive how ſcience can be advanced by ſuch propoſitions; and it certainly could not, if the propoſitions were ſtrictly identical; but when propoſitions, though in effect coincident, are preſented under different aſpects, that is, when what is ſingle in the ſubject is divided in the predicate, or *vice verſa*, or what is a whole in one, is regarded as a part

a part of ſomething elſe in the other; ſuch propoſitions are not identical.

So $10 = 7 + 3$, and $10 = 6 + 4$, &c. are not *identical* propoſitions, but rather *coincident*, or virtually only the ſame. See alſo Prieſtley's edition of Hartley, p. 159; and 6 Condillac, p. 136. 12mo.

PART

PART II.

OF RATIOCINATION AND ITS ESSENTIAL PRINCIPLES.

CHAPTER I.

OF JUDGMENT.*

239. *Judgment* is an act of the underſtanding or intelligent power of the mind, affirming the predicate to be applicable, or not applicable, to the ſubject of the propoſition, when the relation betwixt them is diſcerned or denied.

240. Hence, firſt, every judgment is affirmative, though the affirmation that the predicate is not applicable to the ſubject be uſually called a *negative judgment*.

241. Hence, ſecondly, propoſitions barely announcing the ſtates of one's own mind, or one's own actions, as I ſee, I feel, I am ſick,

* See Condill, 1 Gram. 270. 240. Log. 314.

I ſpeak,

I ſpeak, I perceive, I judge, I will, I command, &c. are not judgments; for they require no compariſon, no act of the mind, but are mere declarations of ſtates of one's mind known by conſciouſneſs: it is otherwiſe, when the ſtates of another perſon's mind are declared.

So alſo *I doubt whether*, &c. does not expreſs a judgment, but merely a *ſtate* of the mind; for *doubt* implies a refuſal or ſuſpenſion of the act of judging, neither affirming or denying the predicate to be applicable to the ſubject.

242. To form a judgment, properly ſo called, on any propoſition, it is neceſſary to underſtand the full import of the words that expreſs the ſubject and the predicate; and next to *compare* them with more or leſs attention, that is, to conſider both attentively at the ſame time:* thus their relation to each other will be diſcovered, and conſequently their agreement or diſagreement with each other; upon the perception of which, the mind *affirms* their applicability to each other, or the

* 3 Condill. *Art d'Ecrire*, p. 11.

 reverſe,

reverſe, or rather actually applies them to each other. In this act of affirmation or application judgment conſiſts: thus judgment implies two things; firſt, the diſcernment of the exiſtence or non-exiſtence of a relation; and, ſecondly, the affirmation or *denial* of that relation.

243. This compariſon, where ſome attention is requiſite, demands the concurrence of the will, and thus far judgment may be attributed to the *will*; but is properly an act of the *underſtanding*, as is evident in judgments that require no attentive compariſon, but merely the knowledge of the ſignification of the ſubject and predicate, as in the propoſitions, *the whole is greater than any of the parts it contains or conſiſts of*; *two and two are equal to four*, and other firſt truths and axioms: theſe judgments being neceſſary.

But before we enter further on this ſubject, it is proper to conſider the nature of relations

CHAPTER

CHAPTER II.

OF RELATIONS IN GENERAL.

244. A relation in the literal ſenſe imports an act of the mind, carrying back its attention from one object to another, after comparing them with each other: it thus diſcerns what the one is, or may be denominated, when compared with the other, or what ſome of its properties, circumſtances, or conditions, may be denominated, when compared to thoſe of another.

It may therefore be defined, the *ſtate of an object comparatively to another object.*

245. Hence Locke* pronounces them to have no reality but in the minds of men; yet as the circumſtance which induces the mind to refer one to the other, or, in other words, the *referibility* of the one to the other, exiſts independently of any attention of the mind to

* Locke, lib. iv. chap. xxx. ſec. 4. And ſee ibid, chap. 25.

either: relations may in this ſenſe be ſaid to exiſt independently of any actual compariſon and reference.

246. In many relations three things neceſſarily occur; the *ſubject*, that is, the thing or perſon referred; the *term*, namely the object referred *to*; and the ground or *foundation* of the reference.

247. Thus when a cat is compared to a tiger, the cat is the ſubject and the tiger the *term*, between which a ſimilarity is diſcerned, and its *foundation* is the external form together with the natural diſpoſition of the animals: the ſubject and term are called *correlatives*. In the relation of equality in mathematics, the foundation cannot be diſtinguiſhed from the ſubject and term.

248. Some relations are *ſynonimous*; for inſtance, thoſe of *ſimiliarity* and *equality*; for as a cat reſembles a tiger, a tiger reſembles a cat. Other relations are *heteronymous*; namely, when the relation which the ſubject bears to the term, is different from that which the term conſidered as the ſubject bears to the ſubject conſidered as a term. Thus the relation which a *father* bears to his *ſon*, is not the ſame

ſame which a *ſon* bears to his *father:* the former is called paternity, the latter filiation. So the relations of king and ſubject, of cauſe and effect, huſband and wife, obligor and obligee.

249. Of relations ſome are *real*, namely, thoſe whoſe foundation has, or has had, a real exiſtence, as that of *ſimilitude, paternity, cauſe, and effect* (otherwiſe called *cauſation*), &c.; but ſome are merely *artificial*, as the relation of *ſignification*, for inſtance, of *words* to the objects they denote; and others natural, as the external appearances of things are the *ſigns* of the train of properties connected with them.

CHAPTER III.

OF THE RELATIONS ON WHICH JUDGMENTS ARE FOUNDED.

250. The relations on which *ſimple* judgments (that is, judgments not extracted by ratiocination) are founded, are, firſt, the re-

lation of ſignification or *incluſion,* * *identity, coincidence or equality, ſimilarity, preſumed ſimilarity; relation to pleaſure or pain; relation of correſpondence of means to an end, correſpondence of ſigns to the thing ſignified; relation to the mind; relation to power, of order, connexion, mutability, ſucceſſion; time, ſituation, diſtance, quantity, action, laws of nature, oppoſition.*

251. The relation of *incluſion,* is that which complex, and alſo generic and ſpecific words, whether forming the ſubject or in the predicate, bear to thoſe words which denote the objects compriſed within their complexity or the extent of their generality.

Thus when I ſay, that *gold is yellow,* the judgment is founded on the relation of the ſignification of the complex word *gold,* with that of the attribute *yellow,* as yellowneſs is comprehended in the word *gold,* which denotes an *aggregate* of qualities or properties, as malleability, fuſibility, a peculiar ſpecific gravity, ſolubility in aqua regia, &c. of which *yellowneſs* is one, and conſequently denoted by it, and comprehended in its ſignification. So

* See Locke, book iv. cap. 1. ſec. 3.

when

when I ſay *ſugar is ſweet*, I affirm that ſweetneſs is comprehended in the ſignification of the word *ſugar*, &c. *

This ſame relation is the foundation of the applicability of *generic and ſpecific* words, whether in the ſubject or predicate: ſo when I ſay, *gold is a metal*, or *man is a ſubſtance*, I affirm that the aggregate of properties denoted by the word *gold*, agrees with thoſe denoted by the word *metal*; or thoſe denoted by the word *man*, agree with thoſe denoted by the word *ſubſtance*, and conſequently that theſe predicates are reſpectively applicable to their reſpective ſubjects.

252. Second, the relation of *identity*, when conſidering a being in different ſtates or circumſtances, and comparing what it is in the one with what is in the other, we find no other difference but that of the ſtates or circumſtances, and therefore judge it to preſerve its eſſential diſtinguiſhing character in all of

* Unfortunately, mankind are not perfectly agreed on the ſignification of many complex words relating to moral or religious ſubjects, though all are, as to thoſe that barely denote ſenſible objects.

them; or, in other words, that it *is* the ſame ſubſtance it *was*.

Thus *water*, when concreted into *ice* or dilated into *vapour*, is judged to be ſtill the *ſame ſubſtance*; for it ſtill preſerves its original compoſition, and is reducible to its original ſtate, without any change in its original properties.

253. Third, the relation of *coincidence* of ſigns differently arranged, or of *equality* in the ſimpleſt parts of arithmetic, algebra, or geometry, for in moſt of the propoſitions laid down in theſe ſciences, theſe relations are diſcovered only by reaſoning.

254. Fourth, the relation of *ſimiliarity*, or diſſimilarity, either between two or more *ſenſations ſimultaneouſly perceived*, as when we judge that *two or more objects actually ſeen have the ſame colour*.

Or between a *ſenſation and an idea*, as when we ſay that an *object we now perceive, reſembles one we formerly perceived*.

Or between two ideas, as that objects not preſent reſemble each other.

On this relation, analogies and ſome figurative expreſſions and types are founded. See No. 51, 1112, 1113, 1115, 1120.

255. Fifth,

255. Fifth, the *preſumed ſimilitude of future to paſt events often repeated, and of the paſt to the preſent in ſimilar circumſtances*; this ſimilitude is ſuggeſted by inſtinct, though in many inſtances confirmed by reaſon: the ſuppoſition is ſo much the ſtronger, as the paſt events have been oftener repeated, and with leaſt variation in ſubſtance, though with much variety of circumſtances. This ſimilitude I call *ſuppoſititious*, becauſe it is not diſcovered by an attentive compariſon of objects, as that is which is often perceived between the qualities of ſenſible objects.

Thus we judge, and with the utmoſt confidence, that in our climate the ſun will riſe within twenty-four hours, though with ſome variation as to the preciſe hour, and that it has done ſo in all paſt ages. So we alſo judge that all animals now exiſting will die, and that thoſe that exiſted one thouſand years ago are now dead, though with much variation of age and other circumſtances.

Judgments founded on this relation are called *belief*.

256. Sixth, the relation by which certain *objects are found connected with, or productive of*

of pleaſure or pain, general, or partial happineſs, or unhappineſs, and the degrees of this connexion.

Thus we ſay, *that a falſe friend is worſe than an open enemy*, that is, *more connected with our unhappineſs than an open enemy is:* and thus we ſay, that an object is handſome, or deformed, the one producing pleaſure and the other pain or diſguſt.

257. Seventh, the relation of *correſpondence*, or *aptitude of parts to a whole, or of means to a propoſed end:* thus we ſay, that *a houſe is well built when its parts are ſo conſtructed as to correſpond with the uſes for which it was intended*; or that a *political conſtitution is well framed* when it anſwers the general purpoſes of internal peace, juſtice, and liberty; or that an army is well diſciplined when it is ſo regulated, as to protect with moſt certainty and efficacy the ſociety for whoſe defence it was raiſed.

258. Eighth, this *correſpondence*, when perceived, excites a peculiar agreeable ſentiment called *approbation*, and the mind *judges or affirms* the arrangement which cauſes it, to be *right* or *proper*, and this in proportion as the correſpondence is more perfect; and, on the contrary, if this correſpondence is found groſſly

groſſly defective or inadequate, a ſentiment of *diſapprobation* is excited, which is diſagreeable or diſguſtful; and the arrangement which cauſes it, is judged to be *wrong* or *improper*.

Again, the ſentiment of approbation being pleaſing, and that of diſapprobation diſpleaſing, and diſagreeing with the propoſed end, the ſubſtitution of the former to the latter is deſired, and the preſence of that arrangement which produces it is required; this deſire and requiſition of the mind is expreſſed by the words *ſhould* and *ought*: thus we ſay, that the arrangement *ſhould* be ſuch as to exhibit this correſpondence and the conſequent ſentiment of approbation.

259. Alſo the author of this arrangement being juſtly required and expected to produce this correſpondence, *ought* to produce it, or, in other words, was *obliged* to produce it, or it was his *duty* to produce it; this duty or obligation is felt by himſelf to exiſt, and the failure of compliance with it is attended with the painful ſentiment of *regret*.

260. Further, to requite the author of pleaſure with pleaſure, and of pain with pain, is a

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wiſh naturally ſuggeſted to, and approved by the mind, and therefore *right* and *proper*; the omiſſion of this requital is attended with diſapprobation and pain, therefore its performance is an obligation, debt, or duty. And reciprocally, the *relation* betwixt the perſon to whom this requital is due and its diſcharge, is called his *merit*, or *right*, or, in other words, he is ſaid to *deſerve it*.

261. Ninth, the relation of *conformity*, or *correſpondence* of ſigns, or propoſitions with the reality of the things ſignified, or announced: this is called *truth*.

Thus when I ſay the *Newtonian ſyſtem is true*, I mean that the propoſitions compriſing this ſyſtem are conformable, or correſpond with the real ſtate of the objects they announce.

262. Tenth, relation of *objects to the faculties or various ſtates of the mind*, as perceptions, ideas, judgment, emotions, affections, averſion, deſires, &c.; and reciprocally of the mind and its ſtates to various objects, and of theſe ſtates to each other. Thus we ſay, that objects are mentally repreſented, judged, willed, deſired; pleaſure, and the objects that procure it, are coveted,

to the word *judgment*, is very different from that I have given, No. 239—243. He tells us, book, iv. chap. 14, ſec. 3; "the faculty "which God has given us to ſupply the want "of clear and certain knowledge, where it "cannot be had, is *judgment*, whereby the "mind takes its ideas to agree or diſagree, or "(which is the ſame thing), that a propo-"ſition is true or falſe without demonſtrative "evidence in the proofs; which ariſes ſome-"times from neceſſity, as better evidence "cannot be had, and ſometimes from indo-"lence, ignorance, or haſte: judgment then "is the putting together, or ſeparating, ideas "when their *certain* agreement is not per-"ceived but preſumed; that is, as the word "imports, taken to be ſo, before it certainly "appears."

274. In this definition of judgment, no other philoſopher agrees with him. *Johnſon* defines it to be the power of diſcovering the relation of one term, or one propoſition to another. *Watts* calls it the affirmation or negation of the agreement or diſagreement of one idea with another. *Duncan* ſays it is an act of the mind aſſembling ideas together, and joining

269. Sixteenth, the relations of *quantity* whether *proper* (as that which is menſurable) or *improper*, that is, which is barely ſuſceptible of degrees; as *great, ſmall, finite, infinite, equal, unequal, ſingular, plural, many, few, rare, denſe.*

Analogous to theſe are the relations of *exceſs* and *defect*; on theſe compariſons are founded,

270. Seventeenth, the relations of *qualities* and *actions*, as *intenſity, violent, forcible, remiſs, feeble.*

271. Eighteenth, relation to the *known laws of nature*, as *ordinary, extraordinary, miraculous.*

272. Nineteenth, the relation of *oppoſition*, as *friend* and *foe*, and all the other relations we have mentioned, contraſted with thoſe that are contrary or contradictory to them; and all *privations* to the qualities or properties whoſe abſence they denote, as *blindneſs, lameneſs, darkneſs, imperfection, criminality*, &c.

The relation of *bodies to their different ſtates*, properties, modifications, and of theſe modifications to each other and their reſpective incidents; or of *mind to its modifications and habits.*

273. The ſenſe which Mr. Locke annexes to

to the word *judgment*, is very different from that I have given, No. 239—243. He tells us, book, iv. chap. 14, ſec. 3; "the faculty "which God has given us to ſupply the want "of clear and certain knowledge, where it "cannot be had, is *judgment*, whereby the "mind takes its ideas to agree or diſagree, or "(which is the ſame thing), that a propo-"ſition is true or falſe without demonſtrative "evidence in the proofs; which ariſes ſome-"times from neceſſity, as better evidence "cannot be had, and ſometimes from indo-"lence, ignorance, or haſte: judgment then "is the putting together, or ſeparating, ideas "when their *certain* agreement is not per-"ceived but preſumed; that is, as the word "imports, taken to be ſo, before it certainly "appears."

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joining or disjoining them according to the reſult of its perceptions of their agreement or diſagreement. *Doctor Reid*, in his treatiſe on intellectual powers, ſays it is an act of the mind whereby one thing is affirmed or denied of another.

275. According to *Condillac*, and ſome modern French philoſophers, judgment conſiſts in the mere perception or rather diſcernment of the agreement or diſagreement of ideas; and where judgment is founded on the perception of the relation of identity, this may be ſaid with ſome appearance of truth, as when I ſay three times five is fifteen: yet even here I affirm the words or ſigns of theſe terms to agree; but in all other judgments, it is plain I may ſuſpend my aſſent, even after the agreement or applicability of the predicate to the ſubject is perceived, upon a ſuſpicion that further conſideration is requiſite, otherwiſe judgments founded on merely apparent agreements could not be avoided: a determinate affirmation is therefore requiſite. Beſides, when I ſay a *learned man*, &c. I perceive a relation between the predicate and ſubject, but do not affirm any thing nor judge.

276. But

ſame which a *ſon* bears to his *father:* the former is called paternity, the latter filiation. So the relations of king and ſubject, of cauſe and effect, huſband and wife, obligor and obligee.

249. Of relations ſome are *real*, namely, thoſe whoſe foundation has, or has had, a real exiſtence, as that of *ſimilitude, paternity, cauſe, and effect* (otherwiſe called *cauſation*), &c.; but ſome are merely *artificial*, as the relation of *ſignification*, for inſtance, of *words* to the objects they denote; and others natural, as the external appearances of things are the *ſigns* of the train of properties connected with them.

CHAPTER III.

OF THE RELATIONS ON WHICH JUDGMENTS ARE FOUNDED.

250. The relations on which *ſimple* judgments (that is, judgments not extracted by ratiocination) are founded, are, firſt, the re-

lation of ſignification or *incluſion*, * *identity, coincidence or equality, ſimilarity, preſumed ſimilarity*; *relation to pleaſure or pain*; *relation of correſpondence of means to an end, correſpondence of ſigns to the thing ſignified*; *relation to the mind*; *relation to power, of order, connexion, mutability, ſucceſſion*; *time, ſituation, diſtance, quantity, action, laws of nature, oppoſition.*

251. The relation of *incluſion*, is that which complex, and alſo generic and ſpecific words, whether forming the ſubject or in the predicate, bear to thoſe words which denote the objects compriſed within their complexity or the extent of their generality.

Thus when I ſay, that *gold is yellow*, the judgment is founded on the relation of the ſignification of the complex word *gold*, with that of the attribute *yellow*, as yellowneſs is comprehended in the word *gold*, which denotes an *aggregate* of qualities or properties, as malleability, fuſibility, a peculiar ſpecific gravity, ſolubility in aqua regia, &c. of which *yellowneſs* is one, and conſequently denoted by it, and comprehended in its ſignification. So

* See Locke, book iv. cap. 1. ſec. 3.

when

when I ſay *ſugar is ſweet*, I affirm that ſweetneſs is comprehended in the ſignification of the word *ſugar*, &c. *

This ſame relation is the foundation of the applicability of *generic and ſpecific* words, whether in the ſubject or predicate: ſo when I ſay, *gold is a metal*, or *man is a ſubſtance*, I affirm that the aggregate of properties denoted by the word *gold*, agrees with thoſe denoted by the word *metal*; or thoſe denoted by the word *man*, agree with thoſe denoted by the word *ſubſtance*, and conſequently that theſe predicates are reſpectively applicable to their reſpective ſubjects.

252. Second, the relation of *identity*, when conſidering a being in different ſtates or circumſtances, and comparing what it is in the one with what is in the other, we find no other difference but that of the ſtates or circumſtances, and therefore judge it to preſerve its eſſential diſtinguiſhing character in all of

* Unfortunately, mankind are not perfectly agreed on the ſignification of many complex words relating to moral or religious ſubjects, though all are, as to thoſe that barely denote ſenſible objects.

them; or, in other words, that it *is* the ſame ſubſtance it *was*.

Thus *water*, when concreted into *ice* or dilated into *vapour*, is judged to be ſtill the *ſame ſubſtance*; for it ſtill preſerves its original compoſition, and is reducible to its original ſtate, without any change in its original properties.

253. Third, the relation of *coincidence* of ſigns differently arranged, or of *equality* in the ſimpleſt parts of arithmetic, algebra, or geometry, for in moſt of the propoſitions laid down in theſe ſciences, theſe relations are diſcovered only by reaſoning.

254. Fourth, the relation of *ſimiliarity*, or diſſimilarity, either between two or more *ſenſations ſimultaneouſly perceived*, as when we judge that *two or more objects actually ſeen have the ſame colour*.

Or between a *ſenſation and an idea*, as when we ſay that an *object we now perceive, reſembles one we formerly perceived*.

Or between two ideas, as that objects not preſent reſemble each other.

On this relation, analogies and ſome figurative expreſſions and types are founded. See No. 51, 1112, 1113, 1115, 1120.

255. Fifth,

255. Fifth, the *preſumed ſimilitude of future to paſt events often repeated, and of the paſt to the preſent in ſimilar circumſtances*; this ſimilitude is ſuggeſted by inſtinct, though in many inſtances confirmed by reaſon: the ſuppoſition is ſo much the ſtronger, as the paſt events have been oftener repeated, and with leaſt variation in ſubſtance, though with much variety of circumſtances. This ſimilitude I call *ſuppoſitious*, becauſe it is not diſcovered by an attentive compariſon of objects, as that is which is often perceived between the qualities of ſenſible objects.

Thus we judge, and with the utmoſt confidence, that in our climate the ſun will riſe within twenty-four hours, though with ſome variation as to the preciſe hour, and that it has done ſo in all paſt ages. So we alſo judge that all animals now exiſting will die, and that thoſe that exiſted one thouſand years ago are now dead, though with much variation of age and other circumſtances.

Judgments founded on this relation are called *belief*.

256. Sixth, the relation by which certain *objects are found connected with, or productive of*

their ſimpleſt forms. So in geometry, the conformity of each propoſition with ſome other propoſition, whoſe relation to primary truths and axioms had already been unambiguouſly diſcerned, is ſhewn with equal clearneſs when the attention and memory are ſufficiently ſtrong.

283. But other relations, not capable of being determined with ſuch preciſion, are expreſſed not by ſimple ſigns but by *words*, whoſe ſignification cannot be exhibited to the ſenſes, though taken from ſenſible objects and conſequently metaphorical. Sometimes ambiguous, and differently underſtood, and contracted or extended in the minds of different perſons: in no ſcience does this ambiguity oftener occur than in metaphyſics. Thus Mr. Locke applied a ſignification to the word *judgment*, very different from that which this word denotes among all metaphyſicians: thus the word *idea* has frequently been miſapplied by moſt writers. The Romans long underſtood by the word *virtue* only *courage*, nor is its ſignification even at preſent unanimouſly ſettled.

284. Hence the evidence moſt frequently attainable

attainable in treating of theſe relations is the *indirect.*

285. Evidence is always accompanied with certainty, but *certainty is often deſtitute of evidence:* thus ſome Mahometans are as certain of the truth of their religion as we are of ours, to ſay nothing of our own various ſects; yet none will ſay that both are founded on evidence. Evidence ariſes from intuitive, demonſtrative, or inſtinctive knowledge; certainty, often from early habits, a partial view of a ſubject, or a paſſionate regard for ſome ſentiment or opinion. Evidence excludes all poſſible doubt; certainty only all actual doubt. Evidence is contraſted with obſcurity; certainty with probability or doubt. We are certain that future events of a phyſical nature will correſpond with thoſe that we have heretofore conſtantly and uniformly experienced, but we have no intrinſic evidence of ſuch correſpondence and conformity in all caſes; for, as Hume juſtly obſerves, the contrary involves no contradiction.

And here, for the ſake of perſpicuity, it may be proper to notice a few general circumſtances in which this aſſurance ariſes, and

which ſerve to diſtinguiſh it into diſtinct ſpecies.

286. The firſt is *metaphyſical* certainty, which is commonly attended with, and grounded upon, evidence. This attends our actual ſenſations and other perceptions, and the clear and diſtinct memory of the paſt, and all demonſtrative reaſonings deduced from our perceptions, &c.

287. The ſecond is *phyſical* certainty, which is ſeldom attended with evidence; of this nature is the aſſurance that attends the belief or expectation of any future phyſical fact.

288. The third is moral certainty, which attends ſelf-evident, or demonſtrative moral truths, and frequently the belief of the paſt, or expectation of the future actions of rational agents. It is often grounded upon, but often alſo unaccompanied by, evidence.

289. The fourth is of a mixed nature, regarding paſt or diſtant phyſical facts, which we have never experienced, and is grounded partly on their conformity with our own experience, and partly on teſtimony. Sometimes the one, and ſometimes the other, is the predominant ingredient that produces this certainty.

CHAPTER

CHAPTER IV.

PROPERTIES (IN A LOGICAL SENSE) ARE SUCH CHARACTERS AS ARE FOUND IN ALL THINGS, AND IN WHICH THEY AGREE WITH, OR DIFFER FROM, EACH OTHER.

Of eſſential Properties.

290. *Eſſential properties* are thoſe which ſo neceſſarily reſult from, or accompany the eſſence of a being, that without them a thing would not be what it is: of theſe many are unknown by us, but many alſo of various things are known, and without a knowledge of theſe, or ſome of theſe, one thing cannot be diſtinguiſhed from another.

291. Of eſſential properties, ſome are ſimilar in all things, and ſome in a great variety of things; theſe and the terms that denote them are called *generic* properties, or more ſhortly *genera*.

292. But this multitude of things which poſſeſs ſimilar generic properties, poſſeſs alſo other

joining or disjoining them according to the reſult of its perceptions of their agreement or diſagreement. *Doctor Reid*, in his treatiſe on intellectual powers, ſays it is an act of the mind whereby one thing is affirmed or denied of another.

275. According to *Condillac*, and ſome modern French philoſophers, judgment conſiſts in the mere perception or rather diſcernment of the agreement or diſagreement of ideas; and where judgment is founded on the perception of the relation of identity, this may be ſaid with ſome appearance of truth, as when I ſay three times five is fifteen: yet even here I affirm the words or ſigns of theſe terms to agree; but in all other judgments, it is plain I may ſuſpend my aſſent, even after the agreement or applicability of the predicate to the ſubject is perceived, upon a ſuſpicion that further conſideration is requiſite, otherwiſe judgments founded on merely apparent agreements could not be avoided: a determinate affirmation is therefore requiſite. Beſides, when I ſay a *learned man*, &c. I perceive a relation between the predicate and ſubject, but do not affirm any thing nor judge.

276. But

276. But *Condillac* advances ſomewhat ſtill more extraordinary; he tells us that all judgments are ſenſations: thus, ſays he, "when "I ſay *this tree has branches*, it is certain that "the ſenſation is ſingle, yet I muſt make uſe "of the general word *tree*, and the general "word *branches*, and affirm their co-exiſtence "in my ſenſation by the word *has*. So if I "ſay *this tree has no branches*, the ſenſation is "equally ſimple, for it barely exhibits a tree "without branches; but to expreſs it, I muſt "ſeparate the general words by the negative "ſign *no*." But he ſhould conſider, that in fact thoſe propoſitions are not judgments, but only declarations of the ſtates of the mind of the perſon who announces them, as already ſaid, No. 241; and in the ſame manner if it had been ſaid *I ſaw this tree with branches*, the propoſition would announce no judgment, but only declare the *idea* of ſuch a tree: ideas being only the copies of ſenſations. But when we ſpeak of the ſenſations or ideas of other minds, we do not announce our own ſenſations, but we *judge* of thoſe perceived by others, for ſuch judgments are founded on the perception of relations: thus when I ſay

travelling to London you ſaw trees; this judgment is founded on the relation, No. 262, of the faculty of ſeeing to the trees that exiſt on both ſides of the road. The falſehood of this opinion is equally evident, when we conſider the various judgments we make of things that cannot be the objects of ſenſe, as that *the ſoul is immortal, God is juſt*; or thoſe relative to notions, as *religion is reſpectable, judgments frequently require deliberation*, &c.; or judgments grounded on teſtimony. In a later work, Condillac expreſſes himſelf more juſtly. See *Grammaire*, vol. i. p. 169, 170, &c. See alſo 6 Condillac, 22, where he contradicts his former opinion that judgment is a mere perception of a relation; and 1 Condillac, 257.

Of Evidence.

277. The affirmation which conſtitutes judgment, is always accompanied with a ſentiment of a peculiar kind; if ſtrong, it is called *confidence*, *boldneſs*, or *firmneſs*; and if feeble, *ſuſpicion*, *belief*, *doubt*, or *heſitation*, which is more or leſs ſtrong or feeble, according as the relation betwixt the ſubject and predicate, on the perception of which, the affirmation

affirmation is founded is more clearly, fully, and accurately diſcerned, or that no relation exiſts.

278. The full and accurate diſcernment of the relation is called *evidence*; and if it be immediately diſcerned when the ſignification of the words that expreſs the ſubject and predicate is underſtood, it is called *intuitive evidence*, and the act of diſcerning it is called *intuition*. Thus when it is ſaid *the whole is greater than its part*, this judgment is founded on the relation of *quantity*, No. 269, which is inſtantly diſcerned when the ſignification of the words *whole* and *part* is known; the propoſition is therefore called *evident*. The affirmation or judgment expreſſed by the word *is*, is called *true*; and the propoſition itſelf is called a *truth*, and, being diſcovered by intuition, a *firſt truth*, as it requires the intermediation of no other truth to prove its truth; but in moſt caſes, the evidence is diſcovered only by a train of reaſoning, as will be ſeen in the ſequel.

The relations on which judgments attended with evidence have in many caſes been grounded, are firſt, that of *ſignification* of

CHAPTER V.

OF OPPOSITION AND MEDIUMS.

300. Four ſorts of oppoſition are commonly diſtinguiſhed: the *contradictory*, as that between ſomething and nothing; the *contrary*, which exiſts betwixt qualities or properties that exclude each other from the ſame ſubject at the ſame time, and in the ſame reſpect, as *heat* and *cold*; *privative*, as *life* and *death*; and *relative*, as *cauſe* and *effect*, for nothing can be the cauſe and effect of itſelf.

301. *Diſparate* are thoſe things which differ as widely from many other things as from each other: thus a man differs as widely from a horſe as from a goat.

302. *A medium* is what lies betwixt two extremes, and is equally diſtant from both. Of theſe two ſorts are diſtinguiſhed; namely, a medium by *participation*, as warmth between *heat* and *cold*: thus air at 32° is deemed cold, and at 97° is deemed hot, but at 65° is deemed

deemed warm. A medium by *exclusion*, is that which excludes both extremes: thus frugality excludes both avarice and prodigality.

CHAPTER VI.

OF DEFINITON AND DESCRIPTION.

303. A definition is a declaration of the nature of an *object*, or of the signification of a *word*, or an enumeration of the several simple ideas, or notions couched under any terms in the relation in which they stand to each other.

304. To *describe* is to enumerate the external appearances of an object, or to denote it by its effects in given cases: thus men are described by their size, bulk, features, complexion, age, and other peculiarities; the aggregate of which serves to distinguish one individual from another.

305. Hence definitions are of two kinds, *real* and *nominal*: thus the nominal definition of *God*, is the *supreme sovereign of the universe*; and

and the *real*, is a *being whoſe exiſtence is* neceſſary; for this denotes the eſſential property that diſtinguiſhes him from all other beings, and from which all his known attributes may be deduced: the other denotes only a relation.

306. To define a corporeal object, is to indicate its phyſical conſtitution, that is, the ingredients of which it conſiſts and their proportion; for this compoſition conſtitutes its nature, and alone remains, when all its modifications are altered: thus water may be defined a compound of eighty-ſeven parts by weight of oxygen, and thirteen of hydrogen airs in a concrete ſtate, or in that proportion. Now whether this water appear in the ſtate of ice, or in that of a liquid, or in that of vapour, this conſtitution remains unaltered.

307. The *nominal* definition of water, or rather of the word *water*, is an inodorous, colourleſs, taſteleſs, liquid, convertible into ſteam at the heat of 212°, and into ice at the temperature of 32°, and a ſolvent for ſalts, gums, &c.: theſe properties are indeed ſufficient to diſtinguiſh it, but do not announce its compoſition.

308. The

groſſly defective or inadequate, a ſentiment of *diſapprobation* is excited, which is diſagreeable or diſguſtful; and the arrangement which cauſes it, is judged to be *wrong* or *improper*.

Again, the ſentiment of approbation being pleaſing, and that of diſapprobation diſpleaſing, and diſagreeing with the propoſed end, the ſubſtitution of the former to the latter is deſired, and the preſence of that arrangement which produces it is required; this deſire and requiſition of the mind is expreſſed by the words *ſhould* and *ought*: thus we ſay, that the arrangement *ſhould* be ſuch as to exhibit this correſpondence and the conſequent ſentiment of approbation.

259. Alſo the author of this arrangement being juſtly required and expected to produce this correſpondence, *ought* to produce it, or, in other words, was *obliged* to produce it, or it was his *duty* to produce it; this duty or obligation is felt by himſelf to exiſt, and the failure of compliance with it is attended with the painful ſentiment of *regret*.

260. Further, to requite the author of pleaſure with pleaſure, and of pain with pain, is a wiſh

by appropriate nominal definitions and deſcriptions.

310. Our knowledge of the compoſition, or phyſical conſtitution, of bodies, does not enable us to deduce their obvious properties from their conſtitution, nor can we find any connexion between them: thus the knowledge of the conſtitution of water does not enable us to explain why it is liquid at certain temperatures, why it is taſteleſs, why it is a ſolvent, &c.; but it is of great importance in affording us an explanation of various chymical phenomena, as the illuſtrious Lavoiſier has ſhewn in numerous inſtances.

311. But in mathematical, moral, and metaphyſical ſciences, definitions are of more general importance; for from the definition of a triangle or circle, their properties may be ſucceſſively deduced: and the reaſon is, becauſe the properties of theſe figures are relations eſſentially connected with them, and with each other; whereas the properties of mere ſenſible objects bear either none, or only an arbitrary relation to each other.

312. When the object to be defined is known, partly by conſciouſneſs, partly by the teſtimony

teſtimony of our ſenſes, and partly by the moſt cogent analogies, its nature is defined by indicating the parts thus known. Thus *man* being defined to conſiſt of a body and a peculiar intelligent principle, with reſpect to ourſelves, we know this by conſciouſneſs; but with reſpect to other men, we know them to be ſuch by the teſtimony of our ſenſes as to their bodies; and we infer the exiſtence of an intelligent principle ſimilar to our own, from the analogy of their actions, wants, and deſires, with our own in ſimilar circumſtances.

313. With reſpect to ſubſtances, of which, not being objects of ſenſe, we have only notions and not ideas, as *God* and the *human ſoul*, we muſt define them by indicating ſome property by which they reſemble or bear ſome analogy to other beings, and ſome property by which they are neceſſarily diſtinguiſhed from all other beings, or at leaſt from thoſe of a different ſpecies: thus God is defined to be *an intelligent Being whoſe exiſtence is neceſſary*. As an intelligent Being, there exiſts ſome analogy betwixt his nature and that of the human ſoul; but the neceſſity of his exiſtence diſtinguiſhes him from all other beings.

 314. Ideas,

314. Ideas, ſenſations, volitions, paſſions, and in general all-modifications of the mind, are incapable of being explained by any definition to thoſe who have not perceived or felt them: however, many of them are marked by characteriſtic external appearances, or peculiar properties or effects; and to many affections, *names* have been given, which, when ſuperficially conſidered, denote only ſome leading ſentiment; yet, when this ſentiment is attentively conſidered, it will be found to be accompanied by, and originate from, a groupe of leſs prominent ſentiments, the developement of which conſtitutes the definition of that name in the ſame manner as the few original properties to which the name of *gold* was originally given, are now aſſociated with all the properties ſubſequently diſcovered in that metal, and denoted by, and comprehended in, that name, though only a few are generally known, and the enumeration of all theſe conſtitutes its definition. Even the ſimpleſt ſenſations may in ſome meaſure be deſcribed by their common properties and their peculiar effects: thus *redneſs* cannot indeed be defined, yet it may be deſcribed to be

be a *colour occaſioned by a ray of light of all others the leaſt refrangible.*

315. The various diſorders, whether mental or corporal, by which mankind are afflicted, are capable only of a nominal, not a real definition.

316. The notions we attach to words expreſſing *power, faculty, cauſe, principle, activity*, are capable of a nominal definition, but that particular conſtitution of the mind to which they owe their exiſtence is unknown.

317. The notions of *right, wrong, virtue, vice, obligation*, and the various diſtinctions of dominion, are capable of real definitions with which the nominal alſo coincide: they are alſo capable of being deſcribed by their effects.

318. Both definitions and deſcriptions ſhould be as ſhort as the intelligence of the names and things defined will permit them to be: they ſhould be ſuch as to ſuit nothing elſe more intelligible or leſs ambiguous, and capable of being ſubſtituted for the word defined.

318.[b] Many have thought the definitions of certain words uſeleſs, as they do not render their ſignification better known, but this is a

miſtake: one principal uſe of definitions, is to aſſign a *preciſe* ſignification not ſubject to variation in various circumſtances, as the vague ſignification of words frequently is.

CHAPTER VII.

DIVISION.

319. This, in logick, denotes either an enumeration of the ſeveral ſpecies that may be arranged under a generic appellation: thus under the appellation animal, rational and irrational animals may be arranged.

Or, ſecondly, the ſubdiviſions of any quantity: thus a fathom is divided into yards or feet, a yard into feet, and a foot into inches.

Or, thirdly, the diſtinct component parts of any whole, as a book is divided into chapters, and theſe into ſections, &c.

Or, fourthly, the ſeveral properties attributable to any being: thus the attributes of the Divine Being are divided into *phyſical*, as omnipotence, omniſcience, eternity, &c.; or *moral*, as goodneſs, mercy, juſtice.

Fifthly,

Fifthly, the properties, one or other of which a ſubject muſt poſſeſs, but not both together: thus every number is *odd* or *even*; all bodies either *move* or are at *reſt*, &c.

Sixthly, the different ſenſes of which a word is ſuſceptible, or in which it has been underſtood.

The rules of complete diviſion are,

320. Firſt, that the members of the diviſion ſhould comprehend the whole extent of the object divided: ſuch is the diviſion of *number* into odd and even.

321. Secondly, that none of the members of a diviſion ſhould contain any of the other members; yet when they are conſidered under different relations, this rule is not infringed. Thus the object of geometry is diviſible into *lines, ſurfaces,* and *ſolids*; though lines are neceſſarily included in ſurfaces, becauſe they are objects of ſeparate conſideration; but opinions are not accurately diviſible into *true, falſe,* and *probable,* but rather into true and falſe, for probable opinions may be true or they may be falſe.

322. Thirdly, that the parts into which any whole is firſt divided, ſhould be the

largeſt and moſt comprehenſive: thus a kingdom is divided into provinces, and theſe into counties, &c.; Europe is divided into countries ſituated above lat. 50°, and thoſe ſituated below lat. 50°, &c.

323. Fourthly, that the ſubdiviſions ſhould not be too numerous, as ſuch overload the memory and introduce confuſion.

PART

PART III.

OF THE DIFFERENT EFFECTS OF RATIOCINATION.

Theſe are conviction, certainty, belief, perſuaſion, preſumption, opinion, or doubt.

The means of producing theſe effects are called *arguments* or proofs.

CHAPTER I.

OF PROOFS.

324. In general it may be ſaid, that the means of diſcovering and aſcertaining either truth or falſehood are called *proofs*; and in this ſenſe, the middle term, which ſhews the agreement or diſagreement of a ſubject and predicate, may be called a *proof*; but more particularly it denotes an argument, or a ſeries of arguments,

arguments, immediately or gradually collecting the truth or falſehood, doubtfulneſs or uncertainty of any aſſertion, from other truths, either already aſſented to or generally known; ſo that to prove a propoſition, is to manifeſt its truth. All proofs are either *demonſtrative*, *indubitable*, *probable*, or *doubtful*, of each of which ſome notice ſhall be taken.

CHAPTER II.

OF DEMONSTRATION, OR DEMONSTRATIVE PROOF.

325. A demonſtration is an argument, or a ſeries of arguments, whoſe premiſes are ſelf-evident, or at leaſt previouſly proved and agreed to, and whoſe concluſion is truly and neceſſarily inferred.

326. The reſult of demonſtration is called *knowledge*, that is a clear and immediate perception of the truth demonſtrated; this is knowledge in the ſtricteſt ſenſe of the word; but if the demonſtrated truth was extracted from a ſeries of previous demonſtrated propoſitions,

ſitions, the concluſion being grounded on premiſes whoſe evidence is barely *remembered*, is not direct and immediate, and conſequently ſomewhat leſs perfect: yet if upon a re-examination of each of the premiſes their truth be aſcertained, and confirmed by the teſtimony of adequate judges, no ſhadow of doubt any longer remains; and in fact, after a certain length of time, the truth of all demonſtrations, whoſe premiſes are forgotten, reſts on the memory of its having been formerly demonſtrated, and alſo on the teſtimony of others; and conſequently the knowledge thus retained, partakes of the nature of *belief*.

327. Demonſtrations are of two ſorts, for they are conſequences deduced from principles agreed to, or cauſes already known to exiſt, or from the nature of the ſubject of the demonſtration, and ſuch are called demonſtrations or arguments *a priori*, as the premiſes are ſuppoſed to be known before the concluſion.

Or, ſecondly, they deduce the exiſtence of a cauſe from the nature of phenomena already known to exiſt; and, as all effects are poſterior

to

to their cauſes, theſe demonſtrations are called arguments *a poſteriori.*

328. Hence we ſee the difference between *intuitive* truths and *demonſtrated* truths; the former being immediately perceived as ſoon as the terms are underſtood, and the latter only by the intermediation of reaſoning. The exiſtence of our minds and of our perceptions is intuitively known; that of the ſupreme Being, and of many of his attributes, is known only by reaſoning.

329. Demonſtrations *a priori* are contained in, and deduced from, premiſes whoſe evidence is either intuitive or demonſtrated. Demonſtrations *a poſteriori*, the exiſtence of phenomena being either admitted, or proved by the teſtimony of the ſenſes, prove the abſolute impoſſibility of their exiſtence, if the exiſtence of ſomething which is denominated their cauſe, be not alſo admitted: both theſe ſpecies of demonſtration are *direct.*

330. Nearly allied to theſe are demonſtrations *ab impoſſibili*, or *ex abſurdo:* theſe eſtabliſh the truth of any aſſertion, by laying down a propoſition directly contradictory to the aſſertion to be proved, and ſhewing that this

this contradictory propoſition is alſo contradictory to ſome eſtabliſhed maxim or truth. It differs from demonſtration *a poſteriori* in this, that it is not deduced from an admitted truth, but from the oppoſition of its contradiction to an admitted truth.

331. To this we may alſo annex a demonſtration uſed by antient mathematicians, called the *method of exhauſtion*, by which they proved the equality of two quantities by a *reductio ad abſurdum*; ſhewing that if one quantity be ſuppoſed greater or leſs than the other, there will ariſe a *contradiction*.*

332. Mathematicians, and particularly Mr. Frenicle, alſo uſe another method of demonſtration in arithmetic, called the *method of excluſion*, previouſly ſhewing that certain numbers (ſuppoſe all odd numbers, or all even numbers) are unfit for the ſolution of a problem; and then gradually excluding others, until they arive at one number (or ſet of numbers) which alone afford the ſolution. This method may alſo be extended to other ſubjects, if all the hypotheſes concerning

* See Hutton's Dictionary.

certain

certain objects can be enumerated, and only one can be ſuppoſed to ſolve the queſtion propoſed, as Marſh has done.

333. The evidence of the *actual* perceptions of our ſenſes is equal to that of any demonſtration, and is therefore juſtly called by Mr. Locke *ſenſitive knowledge*. Book iv. chap. iii. p. 139; and chap. xi. ſec. 9. p. 255.

334. In *phyſical* ſubjects, no demonſtrations, properly ſo called, can be had, except as far as certain experiments are actually obſerved by our ſenſes, which obſervations are equivalent to demonſtrations, or as far as certain reſults are *a priori* deducible from certain allowed properties of bodies.

335. In the *ſcience of morals*, many truths are capable of demonſtration, inaſmuch as it contains many ſelf-evident axioms, from which conſequences may demonſtrably be deduced; yet it muſt be owned, that demonſtrations are much more difficultly obtained in this ſcience than in any other, for ſeveral reaſons.

Firſt, becauſe definitions of the terms to be employed are not univerſally agreed upon.

Secondly, becauſe theſe axioms are not founded

founded on the ſignification of words and the relations reſulting therefrom (as of whole and part, greater and leſſer,) nor on the arrangement of ſigns; nor can in any way be ſubjected to the teſtimony of the ſenſes, but are merely collected from the feelings of mankind in certain ſimilar circumſtances, which are often deranged, if not effaced, by education, cuſtom, example, and paſſion.

Thirdly, becauſe they frequently limit each other; their application, and even their juſt expreſſion, varying with thoſe circumſtances: thus the axiom, *that we ſhould do to others what we wiſh them to do to us*, is limited by another axiom, that *the guilty ſhould be puniſhed*; and is to be underſtood with various other modifications, according to the various relations in which other perſons ſtand with reſpect to us: however, both Locke and Leibnitz think that morals may be demonſtrated.

CHAPTER

CHAPTER III.

OF INDUBITABLE PROOFS, THAT IS, PRODUCTIVE OF CERTAINTY.

336. *Certainty*, as we have already ſeen, is that ſtate of mind in which we experience a full aſſurance, or confidence of the truth or falſehood of any aſſertion; and therefore ſuch poſitions as are deduced from premiſes, which, though not evident, produce this confidence, are emphatically ſtyled *proofs*, as contradiſtinguiſhed from demonſtrations and mere probabilities.

337. With this ſtate of mind, all *actual* doubt or even ſuſpicion of falſehood is incompatible, and therefore excluded; and the propoſitions thus affirmed or denied are called *certain*, and ſo alſo are the objects they denote.

338. Certainty is either *genuine* or *ſuſpicious*: genuine is that which originates from indubitable arguments that approach moſt to a de-

monſtration, being moſt conſonant with eſtabliſhed truths, whether *metaphyſical*, phyſical, moral, or critical, &c. *Suſpicious* is that which is founded on proofs of an ambiguous nature, being ſometimes juſt, but in many caſes fallacious, and therefore in all caſes requires to be verified by a careful ſcrutiny.

339. Again, *indubitable* proofs are either *direct* or *indirect*, or *mixed*: *direct* proofs, in *ſpeculative* ſubjects, are aſſertions of whoſe truth we are convinced or certain, after having ourſelves conſidered and examined them; or as to *facts*, ſuch as are conſonant to our own perſonal and general experience: thus we believe, independently of any teſtimony, *that the ſun has riſen before we were born.*

340. *Indirect* proofs are the legitimate conſequences of the direct; ſuch are duly-conditioned *teſtimony* as to matters of fact, and ſufficient and approved *authority* as to ſpeculative doctrines.

341. *Teſtimony* is the ſole medium by which we can be certain of the *exiſtence* of things, perſons, or facts, which our own ſenſes have not witneſſed, and of which we have no direct proof.

342. With regard to *facts* (under which denomination I compriſe all the above objects) we muſt remark, that ſome are perfectly indifferent, their occurrence or non-occurrence being conſonant to common obſervation; ſuch as the arrival of a ſhip at a ſeaport uſually frequented, the fall of rain on ſome day in December, the death of a perſon at an advanced age, &c.; theſe I ſhall call *common, ordinary*, or *equicaſual facts*.

343. Some are *extraordinary*, ſuch as the birth of twins, the ſudden natural death of young perſons, froſt in the month of June, and ſuch like facts that rarely occur.

344. Some are *marvellous*, being the reſults of natural powers, with whoſe extent, and ſome of whoſe exiſtence we were previouſly unacquainted; ſuch as certain monſtrous animal productions, as animals with two heads, the ſtrength of Sampſon or Milo, the comprehenſive abilities of Newton, the memory of Dr. Wallis, the phenomena of gunpowder, magnetiſm, electricity, galvaniſm, &c.; nay, even the moſt common phenomena previous to their obſervation, as the congelation of water muſt have appeared to the inhabitants

inhabitants of the loweſt latitudes: all theſe facts reſpectively varying from common experience, muſt at firſt excite wonder and repel belief.

345. Laſtly, thoſe that are *miraculous*, which not only vary from, but directly contradict expectations and maxims grounded on univerſal and uniform experience, being produced by means ſimilar to thoſe which ſuch experience has proved to be inadequate to their production: thus ſuch experience has taught us that no dead man has ever re-aſſumed life at the command of another man. But the Scripture aſſures us, that ſome dead men have been reſtored to life by the mere command of another man, and many more ſimilar facts.

To theſe we may annex *ſupernatural appearances*, ſuch as that of angels, which do not indeed contradict the experienced reſults of natural powers, but are evidently independant of, and underived from, them.

346. The teſtimony by which we are convinced of the exiſtence of the fact atteſted, muſt be ſuch as we are certain cannot be falſe, for the mind reaſons thus: of the exiſtence of objects which I myſelf perceived by my

ſenſes, I have the fulleſt aſſurance; I have alſo the fulleſt aſſurance, that other perſons who perceive objects in the ſame manner muſt have the ſame certainty of their exiſtence; and if this certainty can be transmitted to me without any diminution, it is equivalent to that which myſelf could acquire; but I have the moſt ſolid grounds to expect ſuch tranſmiſſion, when the teſtimony is accompanied with the following circumſtances. Theſe circumſtances are;

347. The firſt neceſſary circumſtance, is a ſufficient power in the witneſs of diſtinguiſhing or diſcerning the object atteſted: with reſpect to ſimple objects of ſenſe, where no ſlight-of-hand nor impoſture can reaſonably be ſuſpected, nor any failure or uncommon uſe of the organ of ſenſe in the witneſs, this qualification may be ſuppoſed; but, in other caſes, it may be neceſſary to prove it.

348. Secondly, uniform experience of the veracity of the witneſs on numerous ſimilar inſtances, and of his known character and deportment: it is on ſuch repeated experience, that our certainty of any future phyſical event reſts. It is true, that phyſical events reſulting

ing from neceſſary cauſes, cannot deviate from their uſual courſe; whereas, the mind of man, not being ſubjected to unvarying cauſes, may be influenced by various motives to decline from its uſual line of conduct; but from this circumſtance we can only infer, that a certainty of the abſence of all ſuch ſeductive motives, is requiſite to eſtabliſh the fulleſt aſſurance of the veracity of the witneſs in any particular inſtance: how this certainty may be obtained we ſhall preſently ſee.

349. Thirdly, the accord and correſpondence of ſuch circumſtances as ſhould naturally be expected to precede, attend, or follow the fact atteſted.

350. Fourthly, the ſanction of an oath, with a due knowledge of the civil and religious penalties annexed to its breach.

351. Fifthly, the concurrent and uncontradicted teſtimony of other unimpeached witneſſes.

352. Sixthly, the detriment, loſs, or puniſhment, knowingly incurred in conſequence of the teſtimony.

353. Seventhly, its oppoſition to early, favoured, and ſettled opinions, or inveterate

prejudices entertained by the witneſs, and to revered authority.

354. A teſtimony fortified with all or many of theſe circumſtances, muſt inſpire a confidence of its truth ſo complete, as to baniſh all ſuſpicion, even without requiring previous experience of the veracity of the witneſs, or the ſanction of an oath. On the third and fifth only, the certainty of the exiſtence of moſt foreign countries, and of the now exiſting princes is founded. The bare oath of an unknown perſon, unconfirmed by circumſtances, can never inſpire ſuch confidence as amounts to a certainty, and ſcarcely a ſtrong probability.

355. The motives that may ſeduce a witneſs to deviate from truth, and render his teſtimony ſuſpicious are, firſt, its tendency to promote or ſupport his own intereſt, or that of his relatives, friends, or party, whether civil or religious, or of his profeſſion, or general purſuits; ſecondly, love of the marvellous; thirdly, affectation of ſingularity; fourthly, the fear of offending others, and of incurring ſhame or puniſhment.

356. The circumſtances that tend to falſify a teſti-

a teſtimony are, firſt, the contradiction of other witneſſes equally credible; ſecondly, its incoherence with, and ſtill more its oppoſition to, preceding, concomitant, or ſubſequent incidents; and, thirdly, the bias of the witneſs towards *bigotry*, enthuſiaſm, fanaticiſm, or ſuperſtition, in caſes wherein facts connected with theſe are concerned.*

357. The teſtimony requiſite to prove the facts claſſed in No. 342, 345, muſt be ſo conditioned, as that its falſehood ſhould be more

* *Bigotry* is a blind and outrageous attachment to any party or tenet. A belief, ſtronger than the reaſons (known to the believer) on which ſuch belief is founded, is called *bigotry*.

Enthuſiaſm in general is a vehement impulſe or expanſion of the imagination, reſembling that ariſing from intoxication. *Religious enthuſiaſm*, is a ſtrong but ungrounded perſuaſion of ſome divine communications or revelations to one's ſelf: it is ſuſceptible of various degrees; its extreme and moſt violent degree is *fanaticiſm*, which impels the enthuſiaſt to commit the moſt frantic actions, and to embrace the moſt ſenſeleſs tenets. *Superſtition* is a groundleſs perſuaſion of the ſupernatural efficacy of certain practices, words, actions, or things; or of ſupernatural appearances, or of a fancied connexion of certain natural phenomena with future diſtant events, whether phyſical, moral, or political.

oppoſite to our experience than the exiſtence of the fact atteſted, or its non-exiſtence, if that be aſſerted.

358. With reſpect to *ordinary facts*, this prevalence of teſtimony always occurs; for as our experience of the exiſtence of ſuch facts is *variable*, any teſtimony whoſe veracity has been found conſtant, and which, in the caſe in queſtion, is known, or rationally preſumed, to be uninfluenced by any of the ſeductive motives, No. 355, nor attended with any of the degrading circumſtances, No. 356, muſt impreſs the fulleſt confidence of its truth, and amount to a full proof.

359. With reſpect to *extraordinary facts*, it muſt be noted, that all theſe are at firſt *marvellous*, it is only their repetition that is merely extraordinary; now their oppoſition to previous and general experience, in ſimilar caſes, is nearly of that kind which logicians call ſubcontrary. Experience ſays, *this has rarely happened:* teſtimony aſſerts, *this has lately happened.* The teſtimony then only adds one more to the number of inſtances; the fact has been allowed to exiſt; when therefore it is *complete*, it amounts to a full proof.

360. *Mar-*

360. *Marvellous* facts are ſuch, merely becauſe unſupported by any previous experience; a child wonders at every thing new to him, but his growing experience gradually informs him of the exiſtence of numerous facts, which his previous experience in other places, times, or circumſtances, had not reached. The exiſtence therefore of other facts of this claſs ceaſes to be improbable, and becomes certain when evinced by complete and multifarious teſtimony.

361. *Miraculous* facts being contradictory to general and uniform experience in ſimilar caſes, atteſting the natural impotence of the viſible means employed to effect them, can be proved by a teſtimony conditioned, as in No. 348, 349, 350, 351, and 353: as the fact may be effected by a ſupernatural power, but the falſehood of the teſtimony is abſolutely impoſſible.

362. *Supernatural* facts reſemble thoſe denominated *marvellous* in this, that they oppoſe no known natural power, but are ſimply unſupported by any experience, either of our own or of many paſt ages: they alſo reſemble the *miraculous* in this, that they are not the effect

effect of any mere corporeal power, but ſolely of that which is ſupernatural; that is, a power not compriſed in the ſyſtem in which the ſucceſſion and fabric of corporeal nature are regulated. As their exiſtence has often been imagined and affirmed by perſons of a diſordered imagination, and fraudulently feigned for ſelfiſh purpoſes, though it is not impoſſible, yet in any particular inſtances, it can be proved only by a teſtimony, whoſe falſehood muſt be deemed impoſſible, either through the reaſons mentioned, No. 351—4, or through the concurring atteſtation of a miracle.

SECTION I.

SUFFICIENT AUTHORITY.*

363. Authority is the right that different perſons duly qualified have, or in other words, the propriety and reaſonableneſs, that the *facts* they atteſt, or the uncontradicted *deci-*

* Authority in general is either *imperative*, as that of revelation, or of the laws; or *ſuaſorial*, as the *teſtimonial* and *doctrinal*.

ſions

ſions on objects known to them, ſhould be received by others, though ſtrangers to thoſe facts, and unacquainted with the grounds of ſuch deciſions, as a full proof of their truth; the firſt may be called *teſtimonial*; the ſecond, *doctrinal* authority. The firſt has been already conſidered; of the ſecond I ſhall here treat.

364. Of the exiſtence of ſuch a right, and of its ſufficiency to produce a confidence amounting to a full proof in many caſes, there can be no doubt; it is on ſuch authority that perſons, ignorant of aſtronomy, believe that the ſun is many thouſand times greater than the earth; or that it is ſtationary, and that the earth turns round it, &c.; and on the uncontradicted authority of perſons of the medical profeſſion, courts of juſtice conſtantly rely on the moſt important occaſions, when the object is fairly and ſolely within the ſphere of their knowledge; and have even laid down as a maxim, *unicuique in ſua arte perito credendum.*

365. By *right*, I again repeat, I mean not a *claim*, but a conformity to reaſon, ſimilar to that which thoſe who *ſee* have to lead the blind, or of thoſe that *hear* to inſtruct the deaf:

deaf: in theſe caſes the conformity to reaſon is evident, becauſe the utter privation of the ſenſes in ſome, is contraſted with the full poſſeſſion of them by others; in the ſame manner a total ignorance of the grounds of a deciſion on ſome ſubjects on the one part, and a demonſtration of the point decided upon on the other part, is here ſuppoſed.

366. But I muſt further add, that this right is poſſeſſed only by an aggregate of perſons; for as no man is infallible, ſo there is no *certain* connexion betwixt the deciſion of any man, and the truth of the point decided. But if ſeveral perſons in the ſame, and in foreign countries, uncontradicted for ſome years, by perſons equally credible and uninfluenced by any ſeductive motives, agree in the ſame deciſion, though poſſibly with ſome variation of circumſtances, aſſigned cauſes or degrees, ſuch agreement can be attributed to nothing elſe but to the evident truth of the point decided, equally diſcerned by all of them.

367. Moreover, to produce in others an abſolute certainty of the truth of ſuch a deciſion, it is further neceſſary that its truth

ſhould

ſhould be *known* (in the ſtrict ſenſe of the word) to the perſons deciding it; that is, *demonſtrated*, if the ſubject be capable of demonſtration, and not merely an *opinion*, for if ſo, it can be received by others, only as a high probability, and not as an abſolute certainty.

368. Laſtly, a deciſion admitted in any ſubject as a full proof, muſt be propoſed in terms in ſome ſenſe intelligible, and not repugnant to the evident principles of reaſon, whether metaphyſical, logical, or moral.

Firſt, it muſt be in ſome ſenſe intelligible in order to be believed, for belief of any ſort implies an aſſent to the agreement of the predicate and ſubject of the propoſition propoſed; if therefore both or either be not intelligible, it is impoſſible that ſuch agreement can be diſcerned, the predicate and ſubject, or either of them, being in that caſe mere inſignificant ſounds. So if it were decided that *blytric* was *bocardo*, or that the human ſoul was *bocardo*, ſuch a propoſition could neither be directly believed nor denied, being neither underſtood nor bearing any reference to any thing known; ſo alſo if known words be uſed in an unknown ſenſe, they become equally unintelligible

unintelligible with thoſe inſignificant words juſt mentioned: thus if a perſon ignorant of the ſignification of *hypothenuſe*, and of that of *ſquare* in the mathematical ſenſe, be told that the ſquare of the hypothenuſe is equal to the ſum of the ſquares of the other two ſides of a triangle, though he ſhould know that all mathematicians in all ages have demonſtrated its truth, yet he cannot expreſſly and directly believe it, much leſs ſhould he deny it, no more than he can deny the truth of a propoſition expreſſed in a foreign language.

369. But if a propoſition be couched in terms *partly* underſtood, and *partly* not underſtood, yet ſo as to offer any intelligible ſenſe, it may be believed as to the intelligible part: thus if a perſon ignorant of what is meant by the fluxionary or differential calculus, be told that this mode of calculation is highly uſeful, he may believe that there exiſts a mode of calculation called the *fluxionary*, and that it is highly uſeful; for the terms *calculation* and *uſeful* are known to him, it is only the mode of calculation that is not underſtood by him: thus we all believe, or at leaſt may ſuſpect, that bodies may poſſeſs many

many *unknown* properties, as thoſe of electricity and galvaniſm were, not many years ago.

370. So alſo we may believe a propoſition conceived in terms *generically* the ſame, as thoſe whoſe ſignification is known to us but *ſpecifically* different, and therefore in that reſpect unknown to us: thus blind men may, and in fact do, believe that *colours* exiſt, and that thoſe who *ſee* perceive objects at a diſtance; for a blind man may know, that ſmells, taſtes, ſounds, and feelings by tact, all of which he is acquainted with, are called *ſenſations*, on account of their reference to different organs of ſenſe, and that, though widely different from each other, they agree in being *perceptions* by different organs; and he may be told, that *colours* are alſo ſenſations equally different from thoſe he is acquainted with, and perceived by the eyes, though he can form no diſtinct ſpecific idea of that ſenſation; but he can thus have a *notion* of what is meant by the word *colour*, and this is all any of us can have of what is meant by the word *ſubſtance*, and of many other things. The poſſibility of perceiving by *ſight* objects at a diſtance,

tance, he may alſo conceive and be convinced of, having experienced that *ſounds* alſo indicate the exiſtence of diſtant objects; and as they are conveyed to his ears by an intangible medium, the air, which he knows, ſo may other perceptions be occaſioned by another intangible medium called *light*, conveyed to the eyes of thoſe who ſee, though he can form no diſtinct ſpecific idea of that medium; but the repreſentation of viſible objects, by pictures and mirrors, he ſcarcely underſtands, though perhaps an echo may lead him to ſome notion of them.

371. The truth of all that has been here advanced, is ſet beyond all doubt by conſidering, that lately Dr. Saunderſon, and at preſent Dr. Moys, though blind from their nativity, not only underſtood all that has been here ſaid, but much more, for they have even given excellent lectures on opticks.

372. Nay, a propoſition whoſe terms have not the ſame exact ſenſe according to which we underſtand them, but merely bearing ſome *analogy* to it, differing both in manner and degree, may yet be intelligible, and conſequently believed: thus we believe the firſt

cauſe

cauſe of all things to be *intelligent, good,* and *merciful,* &c. in the abſtract ſenſe of thoſe words, though his intelligence is totally different from ours both in manner and degree, his goodneſs infinitely greater, and his mercy different from ours, which, being ſympathetic, includes ſome mixture of pain; but in him is a diſpoſition infinitely greater to produce the ſame effects; namely, to pardon offenders, without any mixture of pain, and therefore bearing only a ſignification analogical to ours, the ſimilarity being chiefly in the effects produced by that diſpoſition.

373. Secondly, theſe deciſions muſt not be contradictory to principles intuitively or demonſtratively evident; for if ſuch principles can in any caſe be falſe, we can no longer have any certainty of any thing: thus it being intuitively evident that *a thing cannot be and not be at the ſame time and in the ſame reſpect,* no propoſition contradicting this principle can be believed on any authority whatſoever.

374. So it being evident, that *two things equal to, or identified in any reſpect or degree with a third thing, muſt be equal to, or identified in the ſame reſpect or degree with each*

other: any deciſion repugnant to this maxim, muſt be rejected as incredible.

375. So in morals, it being intuitively evident, that *guilt cannot be incurred without ſome act of the will, or blameable omiſſion of the perſon ſuppoſed to incur it,* any doctrine contradictory to this maxim muſt be falſe.

376. And hence in our law, though precedents be of high authority, yet ſuch as are unreaſonable and contrary to the firſt principles of natural juſtice are not to be adhered to, for *tantum habent de lege quantum de juſtitia.**

377. So in the famous caſe of Bath and Montague, Lord Chancellor Nottingham, after conſulting the chief judges of England, decreed in oppoſition to their unanimous opinion, and ſo the law has ever ſince been taken.†

378. Nay, though ſtatutes are of ſupreme authority, yet if they are againſt common right and reaſon, they may be adjudged void.‡

* Hobb. Reports, 270.

† Third chancery caſes, folio.

‡ 8 Rep. 118. Dyer, 313, *per curiam.*

379. So

379. So in theology, though the words of holy writ be of the higheſt poſſible authority, yet if their literal and obvious ſenſe be contrary to evident or demonſtrated truths, it muſt be rejected: thus it being demonſtrated, that the Supreme Being is incorporeal and far removed above all human paſſions, thoſe paſſages in which it is ſaid that he *repented* having made man, that he *waxed angry*, &c. and thoſe in which the *eyes*, *arms*, &c. of a human body are aſcribed to him, muſt be taken in a figurative ſenſe. So though it be expreſſly ſaid, that God made man after his own *image*, than which words nothing can be clearer; and though it is related hiſtorically, yet no Chriſtian now believes that God has a body to whoſe likeneſs that of Adam was made; but *image* is forcibly taken in a ſenſe different from the literal, and not even perfectly agreed on.

CHAPTER IV.

OF AMBIGUOUS OR SUSPICIOUS PROOFS.

380. Ambiguous proofs are thoſe, which abſtractedly conſidered have no intimate or neceſſary connexion with the truth of the concluſion they are adduced to prove; yet are by the inattentive generally conſidered as ſatisfactory, and in reality are in ſome caſes found on examination to be juſt and ſolid, but more frequently erroneous.

381. Judgments reſting on ſuch proofs, without any reſearch into their validity, are called *prejudices*.

382. Moſt of theſe proofs conſiſt in an indiſcriminate reliance on *authority*, and a few on reaſons ſtill more fallacious: thoſe grounded on authority are,

383. Firſt, *the authority of early inſtructors*; which originates chiefly on the reiterated experience of the younger part of mankind, that the aſſertions of the elder, with reſpect to the qualities

qualities of ſenſible objects and the conſequences of their actions, were *true*; and partly on aſſociation with the ſentiments of love and reſpect which they entertain for them: hence they are eaſily perſuaded that the opinions alſo, recommended and earneſtly impreſſed on their unprejudiced minds by perſons ſo beloved and revered through every ſenſe of duty, muſt be true. The belief thus formed, is farther confirmed through habit, glories in its pertinacity, and unſuſpicious of the frailty of its foundation, becomes impatient of contradiction and rejects all examination, as ſome ſects condemn all inquiry, as neceſſarily implying doubt, which they conſider as criminal.

284. It is on ſuch authority that all the contradictory religions of different countries are for the moſt part embraced: perſons now profeſſing the Chriſtian religion, would, if born and educated at Conſtantinople by Mahometan parents, be as zealous Muſſulmen; or if in India, Gentoos; the Mufti, if educated in Rome, would be a Roman Catholic; and if in London or Geneva, a Proteſtant, and *vice verſa*; the Pope, if educated in Conſtan-

tinople, would be a Mahometan; and if in London, a Proteſtant.

385. Thus true opinions may as well be derived from education as falſe opinions; it is therefore an ambiguous proof of the truth of any opinion, though the general plea for obſtinately adhering to it.

386. Secondly, *the authority of eminent and reſpectable perſons:* the acknowledged merit of Ariſtotle, Plato, and Cicero, among the ancients; and of Aquinas, Grotius, Locke, and Newton, in modern times, forms undoubtedly a ſtrong preſumption in favour of the opinions they have adopted: yet, as many of their opinions were founded on prejudices, many on falſe imformation, and ſome on evident miſapprehenſions or falſe notions, and infallibility can be aſcribed to no man whatſoever; their bare authority, unſupported by convincing reaſons, can never be relied on as abſolutely deciſive: its utmoſt extent reaches no further than to form a favourable preſumption before examination, or in the conflict of oppoſite opinions ſupported by reaſons apparently of equal ſtrength, to incline us to embrace that which they favour.

387. Thirdly,

387. Thirdly, *the authority derived from the antiquity of opinions tranſmitted through and adopted by ſucceeding generations:* deference and unbounded ſubmiſſion to ſuch opinions prevail in all nations, whether ſavage or civilized, with ſcarce any exception; and by many is ſtill carried to the moſt extravagant length, ſo as to ſtop the progreſs of all improvement: witneſs the Chineſe and Gentoos. Even the wiſeſt of the ancients were ſo far enſlaved to ſuch opinions, that Cicero and Plutarch aſſert that their belief in the exiſtence of a Supreme Being reſted principally on its being tranſmitted to them from their anceſtors. Symachus, the moſt eloquent of the Pagan apologiſts, urged with great force the antiquity of the Roman worſhip againſt the ſubſtitution of the Chriſtian, as the religion of the ſtate. La Mothe le Vayer relates, that the French ruſtics broke out into a rebellion on being obliged to ſubſtitute iron inſtruments of agriculture to the wooden, which their anceſtors were accuſtomed to employ.

388. Perhaps the following diſtinctions ſhould be taken; firſt, with regard to moſt *ſpeculative* opinions handed down from

ignorant barbarians, their falſehood may fairly be preſumed; but ſuch of theſe opinions as have been received with reluctance, and yet have been retained after a free and impartial examination, by unprejudiced inquirers in civilized and learned ages, may be preſumed to be true. Secondly, that in *practical* matters, ſuch as law and government, the greateſt regard is to be paid to antiquity: ancient cuſtoms, to which moſt nations are fondly attached, forming the baſis of moſt of their laws, and of our own conſtitution in particular; *nolumus leges Angliæ mutari hactenus uſitatas et probatas:* however, the abuſes which time introduces or reveals, or a marked change of circumſtances, renders a gradual innovation here alſo proper and neceſſary. Hence the antiquity of any opinion or practice is at moſt an ambiguous proof of the truth of the one, or of the rectitude of the other.

389. Fourthly, *authority grounded on the general conſent of nations:* this proof, like the foregoing, is alſo ambiguous. With reſpect to ſuch opinions as are the reſult of the moſt ſimple reflexion, and analogous to the cuſtomary inferences of mankind in the common occurrences

occurrences of life, it ſeems to me, that their general adoption is a concluſive proof of their truth, ſuch opinions being only an extenſion on ſpeculative ſubjects of the general argument from uniform and univerſal experience; and, in other caſes, the reſult of the genuine and unvarying moral ſentiments of mankind. Such ſeems to me, in the firſt place, the opinion univerſally held by all nations who have reflected on the ſubject, that there exiſts a powerful and intelligent Being, who has arranged and ſet in order the ſyſtem we inhabit: it is impoſſible to reflect on the ſtructure of animals, the adaptation of their component parts to their ſeveral purpoſes, and on the regular ſucceſſion of the ſeaſons, without perceiving ſenſible marks of intelligence and ſuperior power: hence all nations that have beſtowed any conſideration on ſuch ſubjects (as moſt, even ſavage tribes, have) concur in acknowledging the exiſtence of a Supreme Intelligent Being; but their ſubſequent inferences being the offspring, not of reaſon, but of fear, fancy, or fraud, deviated into the groſſeſt abſurdities; for from their fears originated the belief of a malevolent principle,

and

and the horrid practice of human ſacrifices; and from their fancy, the numerous and abſurd fables of Pagan mythology, and various ſuperſtitions; and to fraud, we muſt aſcribe oracles, and the various arts of divination.

390. The obligatory force of lawful promiſes and treaties, and the ſtill more revered ſanction of an oath, acknowledged by all nations, both ſavage and civilized, receive the fulleſt confirmation from this general conſent.

391. So alſo (the exiſtence of a Supreme Ruler of mankind being preſuppoſed) the general unſophiſticated feelings of all men, of juſtice and injuſtice, their approbation of the one and their reſentment of the other, ſuggeſted the expectation of another ſtate of exiſtence ſubſequent to the preſent, in which a due retribution of rewards and puniſhments ſhould take place: the immediate ſuggeſtions of reaſon or nature could dictate nothing further; their ſubſequent notions of a future ſtate were the mere figments of imagination, and accordingly varied with the fancies and paſſions of different nations.

392. Belief in magick or witchcraft, and in various modes of divination, as aſtrology, augury,

augury, lucky and unlucky omens, &c. has alſo univerſally prevailed; but as this perſuaſion cannot be traced to, or at leaſt is not the legitimate conſequence, of any rational principle, its univerſal reception lends it no ſort of force: it was in fact derived partly from fraud, and partly from broken and imperfect traditions of the events that immediately preceded, accompanied, and followed the univerſal deluge, of which ſome account is given in the ſacred writings.

393. Hence we may conclude, that the general conſent of all nations in holding opinions immediately deducible from rational principles, is a ſufficient proof of the truth of ſuch opinions, but that it affords no force to opinions founded on mere imagination or ſenſible appearances.

394. For the conſent of nations either embracing or rejecting any opinion concerning natural phenomena, does not form any proof of either the truth or falſehood of ſuch opinions, even when apparently proceeding from the immediate teſtimony of their ſenſes, as theſe in fact prove no more than the reality of the ſenſations they tranſmit, but do not, and

cannot

cannot point out the *cauſes* of thoſe ſenſations; yet theſe cauſes mankind have blindly aſſumed, when in general incapable of ſuch inveſtigation, nice ſpeculations of this nature being to them totally unintereſting and unneceſſary. Now the opinion of one thouſand purblind men concerning objects removed beyond the ſphere of their viſion, deſerves no more attention than that of one purblind man: thus all nations, and moſt of mankind, have believed, and ſtill believe, that colours and other ſenſible qualities exiſt out of, that is, are external to the mind that perceives them, and totally independent of it, ſo as to exiſt even when not perceived: though at laſt ſome philoſophers have demonſtrated the impoſſibility of ſuch independent unperceived exiſtence of colours, ſounds, and taſtes, yet they have very inconſequentially ſtopt here; and many ſtill aſſert the independent exiſtence of other qualities as purely ſenſational as thoſe they admit to be ſuch. So alſo the greater part of mankind believe the magnitude of the moon exceeds that of any ſtar; that the earth remains unmoved while the ſun and ſtars revolve round it, and unanimouſly reject

ject and ridicule the notion of antipodes, &c. &c.

395. Fifthly, *the authority of a majority:* this may be conſidered either with reſpect to a majority of voices in legiſlative or juridical councils, or with reſpect to majorities deciding on mere ſpeculative ſubjects. In the firſt, as all the members of ſuch councils have equal rights, and as their voices may be counted but not weighed, there is a neceſſity of ſubmitting to the opinions of a majority, whether right or not. But in mere philoſophic or literary ſubjects, as there is no neceſſity of ſubmiſſion, the authority of a majority is queſtionable, its deciſions having frequently been found falſe, while that of the opinion of the minority in ſuch aſſemblies has afterwards proved true: thus the majority of the medical faculty of Paris proſcribed the uſe of antimonial and other chymical preparations, which at preſent are found ſo powerful and uſeful. The majority of the ſynod of Dordrect, condemned the opinions of Arminius, which were evidently more conſonant to reaſon, and have ſince been generally embraced. Lord Chancellor Finch ſtood ſingle in

in his opinion againſt the two chief juſtices and chief baron, and yet all ſubſequent lawyers follow it. The Royal Academy of Paris diſappoved and ſeverely criticiſed the *Cid* of Corneille, yet all Europe has ſince been loud in its applauſe.

396. However, if ſuch aſſemblies can be ſuppoſed to conſiſt of perſons apparently well informed, and the majority free from premeditated deſigns, unbiaſſed by antient unexamined theories, and uninfluenced by preſent intereſts and prevailing paſſions, or bigotted party ſpirit, it muſt be allowed that their deciſions afford at leaſt a ſtrong preſumption of their truth, and may be received as a proof where better direct contradictory evidence cannot be had, and in ſubjects that admit of any doubt: ſo a minority in a jury may yield to the ſentiments of a majority in a doubtful point.*

397. Sixthly, *the authority of modern opinions:* if the authority of antiquity has been extravagantly overrated two centuries ago, it was unreaſonably undervalued, towards the

* Godwin, V. Philips, 3, G. 3d. 3 Loffe's Gilbert, 1194.

cloſe

cloſe of the laſt, and doctrines delivered under its ſanction have indiſcriminately been ridiculed as *prejudices*, as if their raſh rejection were not as truly a prejudice as their unexamined adoption; *truths* may as well be implicitly received as falſehoods, and in fact ſuch prejudices are relied on in the moſt important concerns of human life. Thus logarithms are employed by navigators, ſurveyors, gaugers, &c. who never inveſtigated the principles on which that mode of calculation is founded: the ſubſtitution of modern to antient opinions not evidently abſurd, without a rigorous examination, is leſs pardonable than mere adheſion to the ancient, which may be preſumed to have been received and approved in preceding ages; but if their original adoption can juſtly be ſuppoſed attributable to oblique and improper motives, antiquity can in vain be pleaded in their favour.

398. It muſt alſo be allowed, that received modern opinions concerning the cauſes of natural phenomena, or criticiſms of ancient facts, being cautiouſly received and duly conſidered, are *in general* of more authority, than ancient opinions or traditions of thoſe facts;

the

the former being the reſults of more numerous, varied, and accurate experiments, of the application of more perfect or better adapted inſtruments, or longer and more accurate obſervation: and the latter of a more enlarged view, a more rigorous compariſon of ancient teſtimonies, and a fuller diſcuſſion of the credit they merit. Yet I have ſaid *in general*, for in ſome, though indeed but in a few inſtances, ſome of the beſt eſtabliſhed opinions during the greater part of the laſt century, have been ſatisfactorily refuted towards its concluſion:* truth is indeed the daughter of time, but her birth is often long protracted.

* As that concerning the origin of the Septuagint, ſee Mach's Diſſertation in Long's Bibliotheq. Vol. I.

CHAPTER

CHAPTER V.

OF FALLACIOUS PROOFS.

399. Theſe are derived either, firſt, from falſe or uncertain traditions; or, ſecondly, from falſe hypotheſes; or, thirdly, from falſe but vulgarly received maxims; or, fourthly, from falſe definitions; or, fifthly, from falſe interpretation of ancient works; or, ſixthly, from words falſely underſtood; or, ſeventhly, from retortion.

400. Firſt, *falſe traditions:* ſuch are the fabulous accounts of the philoſopher's ſtone, which have miſled and ſtill miſlead many; the inextinguiſhable lamp, the wandering Jew, ſympathetic powders, and an infinite number of legendary tales both Pagan, Jewiſh, Chriſtian, and Mahometan; as that of the ſuckling of Romulus and Remus by a wolf, which, however, was ſo firmly believed, that other fables of the ſame nature were rendered credible by their analogy to it; as that of Habis having been ſuckled by a deer as Juſtin owns:

nay, on ſuch feeble foundations many rights have been claimed and aſſerted, both in ancient and modern times.

401. Secondly, *falſe hypotheſes:* geometricians have frequently aſſumed falſe hypotheſes, to evince the truth of the propoſitions they mean to eſtabliſh, from the abſurdity of the conſequences reſulting from hypotheſes that contradict them; and in this manner they may perhaps be often advantageouſly applied in other ſubjects. But many mathematicians ſuppoſed the fluxionary mode of calculation grounded on the notion of infinites, nay of infinites infinitely ſurpaſſing each other, either in magnitude or minuteneſs, to the great detriment of other ſciences; for that doctrine being ſuppoſed true, though avowedly unintelligible, it was contended that other doctrines, equally unintelligible and contradictory, ſhould not be rejected merely on that account: this monſtrous doctrine was indeed early oppoſed by Berkeley, Maclaurin, and Jarrige, but Carnot alone has of late clearly expoſed its ſource and origin.

402. The ſlow progreſs of natural philoſophy and medicine before the age of Boyle and

and Newton, is in great meaſure imputable to the raſh adoption and reliance on hypotheſes. Liebnitz aſſures us, that the attachment of the Cartheſian ſect to the ſuppoſition of ſubtle, globular, and ſtriated matter, was as ſtrong as to the demonſtrated theorems of Euclid.

403. So in theology, the groundleſs aſſumption of the abſolute perfection of the Maſoretic copies of the Old Teſtament, or *hebræa veritas*, as they affected to call it, for ſome time obſtructed the progreſs of juſt critical inquiry into the integrity of the ſacred text, and even the improvement of chronology, &c.

404. Thirdly, *maxims generally received, though falſe or miſunderſtood:* not to inſiſt on many held in the ſixteenth and ſeventeenth centuries, ſuch as, that *nature abhors a vacuum*; that *elements* (as ſome bodies were called) *do not gravitate in their proper places*; &c.: ſome ſuch maxims ſubſiſt even at preſent; ſuch as, that *God created all things for his own glory*, or *to manifeſt his perfections*; that *nature acts in the ſimpleſt manner*; this laſt is indeed true, but commonly miſapplied, as the mode

in which nature *really* acts is often little underſtood; and that mode which appears to us the ſimpleſt upon a ſuperficial view, is frequently found not to be that which nature really follows, which yet, when narrowly examined, is found to be (every thing conſidered) the ſimpleſt, of which chymiſtry furniſhes abundant examples. So alſo it has been laid down as an incontrovertible truth, that water was an element, and that elements were indecompoſable, yet the contrary is now almoſt generally acknowledged.

405. So alſo the maxim, that *whatever is natural is invariably the ſame at all times and places:* which is clearly contradicted by daily experience; for language is certainly natural to man, yet it is prodigiouſly varied among the various tribes of mankind; ſo certain moral principles are natural to mankind, yet their application, in many inſtances, has, through the influence of ſuperſtition, or of adventitious opinions, or various other circumſtances, widely differed. Who can doubt but the Ammonite mothers tenderly loved their infant children, yet by a barbarous ſuperſtition they were led to burn them.

406. So

406. So it has been held, *that diverſity of opinions, on any ſubject, argues the uncertainty or falſehood of all of them:* this undoubtedly is often, but not conſtantly and invariably true, few men are ſufficiently informed, and perhaps fewer ſufficiently unprejudiced and unbiaſed, to form a juſt opinion on ſome ſubjects; in caſes where they may be ſuppoſed to be ſo, if the ſubject be within the reach of human faculties, a true deciſion is at laſt obtained, though its truth may long be reſiſted: thus though many opinions concerning the cauſes of lunar eclipſes, and the ebbing and flowing of the ſea anciently prevailed, yet one of them, viz. that now generally adopted, muſt have been always true: but this maxim will be more fully conſidered in the ſequel.

407. Fourthly, *falſe definitions:* ſuch definitions become principles on which many erroneous opinions are founded; thus ſome ancient philoſophers having defined the *ſun to be a ſubſtance having the power of producing motion,* inferred the loadſtone to be animated, becauſe it moved iron; and as the earth ſeems to produce ſpontaneouſly all vegetables, it has been held to be animated: ſo alſo vegetables

 themſelves

themſelves were ſuppoſed to poſſeſs a particular ſort of ſoul.

408 So Spinoſa having defined God to be an infinite ſubſtance comprehending all exiſtence, inferred that all other beings, even men and animals, the earth, planets, and ſtars were mere modifications of the divine ſubſtance.

409. So *chance*, which properly denotes an *unknown cauſe*, or a known cauſe of an undeſigned effect, has by many been taken to denote the *abſence of any cauſe*; and thus it was held that the univerſe originated from chance, that is, from no cauſe whatſoever: many even civilized heathen nations imagined it to be a divinity or goddeſs, which they called *Fortune*.

410. So alſo *fate*, or *neceſſity*, or *deſtiny*, was imagined to denote a real being, to whoſe decrees even the gods themſelves were ſubjected, and to which all events were aſcribed.

411. Fifthly, *ambiguous or equivocal words falſely underſtood*: theſe abound in every, even living, languages, but it is principally in dead languages that they occaſion many miſtakes. I ſhall here mention three that have various ſignifications

ſignifications in moſt languages, and that have frequently been miſunderſtood; theſe are *nature*, *reaſon*, and *law*.

412. Firſt, *nature*: of this word Mr. Boyle has well enumerated the ſeveral ſenſes; firſt, it is taken for the *world* or the *univerſe*, as when we ſay there is no ſuch thing in *nature*.

Secondly, it is taken for *God* the creator of all things, as when it is ſaid that nature has furniſhed animals with various inſtincts.

Thirdly, it often denotes the *aggregate of powers*, or particular *conſtitution* of animal or vegetable bodies, as when it is ſaid that *nature* operates a *cure*, or that it is ſtrong or weak, &c.; and ſo it is ſaid, that it is the *nature* of oaks to produce acorns.

Fourthly, the eſtabliſhed order and ſettled courſe of things is ſo called, as when it is ſaid that night *naturally* ſucceeds day, or that miracles ſurpaſs the powers of nature: ſo it is ſaid, that animals *naturally* cheriſh their young, that bees *naturally* make honey, or that ſpeech is *natural* to man.

Fifthly, it is taken for that diſpoſition or courſe of things that is independent of human induſtry, in oppoſition to that which is artificial:

ficial: thus we ſay, that a cataract is *natural*, but a caſcade or water-ſpout is artificial.

Sixthly, it has been uſed to denote the early and unimproved ſtate of mankind, in oppoſition to the more civilized ſtate; men are then ſaid to have exiſted in the ſtate of *nature*: this was not certainly the ſtate of a ſavage, though afterwards ſome men became ſo from various cauſes.

Seventhly, it is often employed to denote *ſort* or *kind*, as when we ſay, diſputes of this *nature* are not eaſily ſettled.

Eighthly, it often denotes the *eſſence* or *primary ſpecific properties* of things: thus we ſay, human *nature*, &c. or that the ſoul is *naturally* immortal.

Ninthly, it is often taken for conformity to truth and reality, as when it is ſaid that the deſcriptions of poets, or the repreſentations of painters or ſtatuaries, are *natural*.

Tenthly, many of the antients have deemed nature to be a ſort of divinity: thus Pliny gravely ſays, *naturæ nihil impoſſibile videtur*; and Ovid attributes to this goddeſs, goodneſs ſuperior to that of God, *hanc Deus et melior litem natura diremit*. In ſhort, it is uſed in contra-

diſtinction

diſtinction to education, art, deſign, chance, or to a miracle.

413. Second, *reaſon* has alſo been taken in different ſenſes: I ſhall here barely notice, that it is often taken, firſt, for intuitive or demonſtrated truth; ſecond, for deciſive and convincing arguments; and, third, for high probabilities. What is called corrupt reaſon, is in fact no reaſon, but a mere deluſion. See poſt. No. 755.

414. Third, *law* in its primitive ſenſe denotes the command of a ſuperior having power to puniſh its infraction, and not evidently contrary to that of a ſtill ſuperior power. In a ſecondary ſenſe, it denotes the conſtituted order and ſucceſſion of natural phenomena, abſtracting from the great author of that conſtitution: thus we talk of the laws of gravitation, hydroſtatics, refraction, reflexion, chymical affinities, &c; and of natural affections, paſſions, propenſities, &c.

415. However, by a great perverſion of language, it has been itſelf taken for an efficient and operative cauſe, independent of any intelligent and all-powerful agent, as Mr. Paley juſtly remarks.

416. Sixthly,

416. Sixthly, *texts falſely interpretated:* this commonly happens by taking in a literal ſenſe what ought to be underſtood in a figurative ſenſe, or converſely: of ſuch miſtakes, of which there are innumerable inſtances, I ſhall mention only two, whoſe abſurdity is generally acknowledged. Chriſt having called Herod a fox, Luke xiii. 32. Some imagined that Herod had at that inſtant been tranſformed into a *fox.**

So it being ſaid in Geneſis, that *God made man after his own image:* the Anthropomorphites interpreting this, and numerous other texts of the ſame import, literally, concluded that God really had an human form: their arguments are ably and plauſibly ſtated by Burnet, in his Archæologia, p. 158.

So alſo the immobility of the earth, and the motion of the ſun, were erroneouſly deduced from other texts, all of which relate only to *appearances* or vulgar opinion.

417. *That inſoluble objections are not a ſufficient proof of the falſehood of the opinions againſt which they militate:* thus ſome ſcholaſtics perceiving the incompatibility of the intuitive

* Leibnitz, vol. i. p. 80, 4to.; and Grotius.

truth

truth of ſome maxims, with that of notions which they deem grounded on divine revelation, have had the candour to acknowledge this oppoſition, and the boldneſs to deny the truth of theſe maxims, when applied to divine ſubjects: thus the axiom, *that things identified with a third thing are identified with each other*, upon which the ſyllogiſtic art and all reaſoning is founded, was denied by the late celebrated profeſſor Tournely,* and others quoted by Maſtrius.† Segui endeavours to evade its force by a new and ſcarcely orthodox diſtinction.‡ Some Proteſtant divines of great note aſſert, that we ſhould believe two propoſitions that appear incompatible with each other, and judge the reaſons that evince their incompatibility to be falſe, though we ſhould not be able to refute them. See 3 Bayle Poſth. works, p. 824; and Arnauld Apolog. des Cathol. vol. ii. p. 55 and 56, there quoted; and Leibn. ſur l'Entendment, &c. p. 467, (a poſthumus work containing an examination of Locke.) Luther owns, that according to philoſophy,

* De Trinitat, p. 18, 24, and 264.

† Log. p. 38.

‡ 1 Metaphy. 139.

the

the incarnation is impoſſible.* See 1 Leibn. 74 and 77. Yet Aquinas, prima parte queſt. prima art. 8°. denies that inſoluble arguments can be brought againſt articles of faith; and Tournely's doctrine is denied by the Abp. of Paris, in his Mandment againſt Rouſſeau.

418. But to develope this matter more fully it muſt be remarked, that the inſolubility of an objection to any doctrine, may ariſe either from the incontrovertible truth of ſuch objection, and its evident oppoſition to the very ſubſtance or abſtract notion of the tenet againſt which it is adduced, or from its oppoſition to our manner of conceiving the application of that doctrine to particular caſes. Inſoluble objections to the ſubſtance of any doctrine, are certainly demonſtrative of its falſehood; but ſuch objections to the mode of its application to particular caſes are not always concluſive, becauſe this application may be made in a manner, to us inconceivable, being above the reach of our faculties, as will preſently be ſhewn.

* The irreconcilability of faith and reaſon, is ſaid to have been condemned by Leo X. in the laſt council of Lateran. 1 Leibn. 73.

419. Thus

419. Thus the properties of beings are partly *abſolute*, and partly *relative*: the abſolute are thoſe of the beings themſelves abſtractedly conſidered, as *exiſtence*, *ſubſtance*, *ſpirituality*, *unity*, *neceſſity*, *contingency*, &c. Inſoluble arguments adduced either for or againſt any of theſe, muſt in the one caſe neceſſarily eſtabliſh them, being demonſtrative of their reality; in the other caſe as neceſſarily refute and ſubvert them, being demonſtrative of their nullity: thus an inſoluble argument againſt the *exiſtence* of the bad god of Manes, is a demonſtration that no ſuch Being exiſts. So the inſoluble arguments adduced by Berkley againſt the *ſubſtantiality* of bodies, are demonſtrations that bodies are modes and not ſubſtances, &c.

420. But it is otherwiſe with regard to *relative* properties; namely, thoſe that imply a connexion with, or a relation to, other beings, or even to the modifications of one's own being; ſuch as *power*, *intelligence*, *knowledge*, *wiſdom*, *juſtice*, *goodneſs*, &c.: the *manner* in which theſe are poſſeſſed and exerciſed by beings of a different order, may be, and in the Supreme Being *muſt be*, extremely different from

from the imperfect manner in which we poſſeſs them, and conſequently inconceivable by us:* this is rendered evident by the different modes in which individuals, even of our own ſpecies, attain the knowledge of one and the ſame fact; modes that are abſolutely inconceivable by, and above the faculties of thoſe that do not poſſeſs both: thus a man *blind* from his nativity, knows the diſtance of approaching objects, as horſes and carriages, by the difference of ſound; and a man *deaf* from his nativity, perceives the approach of the ſame objects by his *ſight:* neither can conceive the *manner* in which the other attains that knowledge, yet both poſſeſs it, and each is *certain* that the other poſſeſſes it.

421. The human ſpecies attains knowledge by *ſenſations*, or *ideas*, or *notions*, or by *reaſoning:* all theſe modes involve ſome imperfection, therefore the mode in which the Supreme Being poſſeſſes all knowledge muſt be inconceivable by us, and out of the reach of our faculties. Arguments therefore reſpecting it,

* See 12 Biblioth. Choiſie, 270; and Deſcartes, Princip. part 1. ſec. 41; and Abp. King on the Origin of Evil, p. 68.

grounded

grounded on the meaſure, mode, and extent of *our* knowledge, may be inſoluble, becauſe the mode of knowledge of the Divine Being is unknown, and to us inconceivable: all we know concerning it is, that it exiſts, ſince wiſdom is found in his works, which could not exiſt without intelligence; and that whatſoever may be the mode of its exiſtence, it is equivalent and infinitely more than equivalent to ours, as well as more perfect and extenſive, than any which created beings can poſſeſs, and the ſame may be ſaid of the other divine attributes; the ways of God may be *inſcrutable*, but not indefenſible, for they cannot be ſhewn to be contradictory to the eſſential notions of juſtice or goodneſs, unleſs every poſſible mode of exerting them were ſhewn to be inconſiſtent, &c.

422. Seventhly; *retorſion* conſiſts in ſhewing, that the arguments adduced againſt any opinion, are of equal force againſt the opinion of thoſe who object to them; this mode of arguing is called *argumentum ad hominem*: it is no proof of the truth of the opinion of him that employs it, for recrimination is not a juſtification, it is rather of the nature of what lawyers call an *eſtoppel*.

CHAPTER

CHAPTER VI.

OF PROBABLE PROOFS.

423. As arguments that approach moſt to demonſtrations are productive of certainty, ſo thoſe that approach to certainty are productive of probability, and the nearer the approach to certainty, the higher is the probability; nay, ſome probabilities approach ſo near to certainty, that they can ſcarce be diſtinguiſhed from it: thus we are frequently certain, that is, we are convinced of the future exiſtence of objects that nevertheleſs are not certain. So we all believe, that in our climate the ſun ſhall riſe within twenty-four hours; yet we all believe that this world ſhall have an end, conſequently that ſome day muſt be the laſt: it is therefore *only* probable that the ſun ſhall riſe to-morrow (if it be permitted ſo to ſpeak), but the probability is ſo high, that the leaſt doubt of it is not entertained.

424. The mind may therefore be certain of

of a fact not abſolutely certain; hence the ſcholaſtics properly diſtinguiſhed two ſorts of certainty; the one, conſiſting of the excluſion of doubt and reſiding in the mind, they called *ſubjective certainty*; the other, denoting the reality of the object, they called *objective certainty*.

425. Probability is alſo called *veriſimilitude*, and juſtly, for probable frequently ſignifies a fact conformable or ſimilar to facts already *eſſayed*, that is, experienced *probata*; and hence this term has been applied to arguments or doctrines conformable to other *known* truths, or in the ſuperior number of poſſibilities of one ſet of events, as that a die ſhall exhibit a number above one: this is a nearer approach to a certainty.

It would be unreaſonable to refuſe all light becauſe we cannot have that of noonday; though if the light be ſo weak that we cannot diſtinguiſh objects, we ſhould form no judgment concerning them; but moonlight is often ſufficient.

426. Probability is either independent or dependent

Independent probability, is that which is grounded on mere experience or obſervation.

Dependent, is that which reſults from a majority of the diviſions of a *certainty:* this may be called *caſual* probability, and the former *empiric*. The nature of dependent or caſual probability may be clearly underſtood, by conſidering the event of caſting a common die, four of whoſe faces may be ſuppoſed marked with an *ace*, and two only with a duce; here it is *certain*, in the firſt place, that ſome one or other of the ſix faces of the die will be turned up, though no more than one can be turned up: but, ſecondly, this certainty is ſplit or divided betwixt the ſix faces; for each of them has, as far as we can ſee, an equal chance of being turned up; and though unperceived cauſes certainly interfere in favour of the face that ſhall be turned up, yet, as we are ignorant which of the faces they will favour, they are not to us as non-exiſting.

And, thirdly, as four of theſe faces favour the appearance of an *ace*, and only two that of a duce, it is plain that the appearance of an ace is indicated by a majority of the ſix diviſions of a certainty, and hence we judge it *probable*; upon the principle that, among cauſes ſeparately conſidered as equally powerful,

ſul, the determination of the majority of them to produce the ſame effect, ſhall be ſtill more powerful, and conſequently preferably expected; or in other words moſt *probable*, yet ſtill not *certain*; for there is a poſſibility that the unperceived cauſes of the turning up of a particular face of a die, ſuch as the quantity of motion it receives, the angle or edge which it preſents in its fall to the table, &c. may favour the appearance of the face indicated by the *minority* of the faces, and render it victorious over its antagoniſts.

However it is certain, both with reſpect to empiric and caſual probability, that, on repeated trials, the moſt probable event will moſt frequently happen.

427. And for the ſame reaſon with regard to paſt facts, *prima facie*, aſcribable to different cauſes, that particular cauſe, or combination of cauſes, muſt be deemed moſt probably to have acted, which moſt of the circumſtances preceding, concomitant, or ſubſequent to the fact concur in pointing out and beſt agree with it.

428. Thus we ſee that our opinion of the probability of any *future* fact, is grounded on

our knowledge and compariſon of moſt of the cauſes (if many,) capable of producing it; or, if theſe be entirely unknown, on the relation of ſimilitude or analogy of the future to the paſt, in ſimilar or analogous circumſtances.

429. And our opinion of the probability of *paſt* facts, is founded on the known relation of effects of that ſort, to their known cauſes; or if theſe be unknown, and the facts known, theſe are with probability aſcribed to ſuch cauſes, as are commonly known to be connected with them. It is ſuch connection that, independently of teſtimony, forms the *internal probability* of paſt facts, or their cauſes.

430. So the probability or truth of any doctrine, argument, or ſpeculative opinion is derived from its conformity or analogy to ſome other doctrine of whoſe truth we are *certain*.—Thus the opinion that the planets are inhabited, is probable, from their ſimilitude in many reſpects to the earth; but it is not certain, becauſe this opinion might be rendered ſtill more probable, by the actual diſcovery of the inhabitants; or of

their

their houſes, or by revelation; for there is this difference betwixt the higheſt probability and certainty, that probability is always ſuſceptible of increaſe or decreaſe, whereas well-grounded certainty is capable of neither.

A deficiency therefore of any ſpecies of proof which the nature of the caſe admits of, renders the fact or doctrine, to which it is wanting, barely probable, though every other ſpecies of proof ſhould ſupport it. Thus Boerhaave ſhewed the probability that Mercury was congealable by ſome high degree of cold; but it was not certain until Gmelin actually found it congealed; and hence our law, which always ſeeks for certainty, will not allow the copy of a deed to be given in evidence while the original exiſts.

432. Though all truths are compatible with each other, yet they are not linked with each other in ſuch a manner, as that their connexion can eaſily be ſeen, or they may be expreſſed in terms ſo general, as to be inconſiſtent with each other in the whole extent of their generality, and therefore require diſtinction, and admit exceptions in particular caſes.

Thus a propoſition, conformable to one truth, may not be ſo to other truths, which a doctrine may contain: hence the *probability* of a doctrinal propoſition, conſiſts in its conformity to ſome of the truths contained in a ſubject, and its *certainty* in its conformity with all of them, as in political, legal, moral, and theological ſubjects.

433. If a certainty be *equally* divided between two or more events, as there is no reaſon to determine us to think one of them more probable than the other, each of them is reckoned improbable, though one or other of them muſt happen; and the greater the number of events among which the certainty is equally diſtributed, the greater the improbability of each of them; not from the oppoſition of any of them to experience, but becauſe they counterbalance each other in our ſurvey of them; and the impoſſibility of conſidering any of them more probable than the other, renders all of them *negatively* probable, from the abſence of probability, as oppoſition to experience renders events in other ſubjects *poſitively* improbable

in

in our eſtimation. Thus in a common die, each of whoſe faces is progreſſively numbered, the certainty of ſome or other of them being turned up, is divided between the ſix faces; the eventuality or chance of the appearance of each of them, is only one ſixth of the certainty, and depends on unperceived cauſes, as already mentioned.

Mr. Hume, indeed, thinks that *chance* properly denotes the negation of any cauſe; but that an event ſhould happen without any cauſe, appears to me, and to the reſt of mankind, perfectly impoſſible. He grounds this aſſertion on the obſervation, that chance leaves the mind perfectly indifferent, either to conſider the exiſtence or non-exiſtence of the object, regarded as contingent;* whereas this indifference evidently ariſes from the known equality of the cauſes that lead to different events, and ignorance of the circumſtances leading to the effect of ſome one of them, which muſt deſtroy the apprehended equilibrium. Thus we know that there are on one common die, ſix ſides, on each of which,

* Treatiſe on Human Nature, vol. i. p. 221.

after projection, it is capable of reſting, and of thus preſenting a different face; but of the circumſtances that determine it to reſt on one face rather than on another, we are ignorant and conſequently we are left in a ſtate of indifference, or rather of indeciſion. He adds, "that ſince an entire indifference is eſſential to chance, no one chance can poſſibly be ſuperior to another, otherwiſe than as it is compoſed of a *ſuperior number* of chances." It is ſtrange he did not perceive the abſurdity of ſuperior number of *nothings*.

434. The aſſent or credit given to facts or arguments deemed probable, or preſumed to be true, is called *belief*, or *ſimple belief*, *opinion*, or *perſuaſion*; it is always accompanied with a degree of aſſurance or confidence, commenſurate with the apprehended probability of the fact or point exhibited to the mind; but the term belief is variouſly applied, as will preſently be ſeen.

435. As *certainty* is attained by proofs partly *direct*, and partly *indirect*, (No. 339, and 340,) ſo alſo is opinion or belief, which is only a more or leſs diſtant approximation to certainty.

437. *Direct*

436. *Direct* proofs are ſuch as directly evince the agreement of the point in queſtion with other truths relative to the ſubject, as already ſaid, No. 348, 349, 350.

437. *Indirect* proofs are ſuch as are extrinſic to the fact, yet tending to corroborate or eſtabliſh its probability, ſuch as *teſtimony*; and with reſpect to doctrines, *authority*; both indeed, inferior to ſuch as produce certainty, of which I have treated, No. 346, &c.; yet ſtill ſufficiently ſtrong to inſpire credit, and therefore called *credible*, or *reſpectable* (and not probable, for this term is more properly applied to the facts atteſted, than to the teſtimony itſelf.)

438. The credibility of the teſtimony productive of probability, reſts on nearly the ſame characteriſtic circumſtances, as thoſe that produce certainty, but either leſs numerous, or leſs forcible, or leſs clearly diſcerned, or combated by contradictory teſtimony, or reſiſted or counterbalanced by oppoſite internal evidence; all theſe incidents varying in degree, neceſſarily generate various degrees of credit, and hence the diſcordant judgments of mankind, on ſubjects ſuſceptible only of probability;

probability; but before I detail more fully the characters neceſſary to beſtow on teſtimony any degree of credit, it is proper to explain ſome obſcure or ambiguous phraſes that are commonly employed in treating of it.

439. *Belief:* this term is frequently uſed in a vague and general ſenſe, to expreſs our aſſent to any information, whether this aſſent be ſtrong or weak, whether founded on the moſt convincing or the moſt trivial proofs. Thus we ſay, *we believe our ſenſes, we believe the ſcriptures, we believe a witneſs,* or *common report*; ſome *believe* the propoſitions of Euclid to be true, on finding them demonſtrated, others *believe* them to be true merely on teſtimony; thus we ſee this term employed indiſcriminately to denote aſſent, grounded on metaphyſical evidence or aſſent, accompanied with certainty, or aſſent to mere probability, or perhaps ariſing from the influence of our paſſions; yet no one will ſay *he believes ſnow to be white.*

440. To prevent this ambiguity, I would willingly denote, by *mere belief,* an aſſent to probability: it is only in this ſenſe it is taken by Locke, B. 4. Chap. xv.; and in our law; noting

noting however that there are various degrees of probability; the higher, approaching to certainty, induce a *firmer* belief, the lower, an *inclination to believe*, and the loweſt, a bare *ſuſpicion*. See Poſt, No. 675.

441. To *believe in*, ſignifies to aſſent with the utmoſt confidence to the authority of any perſon, or to any doctrine. So we *believe in God*, or we *believe in the doctrines of Chriſtianity*; ſo, for many ages, philoſophers believed in Ariſtotle.

442. Again, we ſay *we are certain* of propoſitions that are intuitively evident, and alſo of facts or propoſitions of which we are fully convinced, though not evident; but of facts or propoſitions which we deem only probable, we ſay we are *perſuaded*, we *believe*, we *conjecture*, we *think*, or we are *inclined to think*; we have no ſingle verb denoting that we are certain, and therefore are here alſo obliged to uſe the word *believe*.

443. *Belief*, derived from the circumſtances mentioned No. 347, 348, 349, previous to any teſtimony relative to, or grounded on, reſpectable authority, is alſo called a *preſumption*. (See its definition, 1 Lofft, 303, and good

good examples, 2 Lofft, 898, and Peake, 21, 22, 2 M'Nally, 577.)

444. Preſumptions are either *ſlight, ſtrong*, or *violent*.

Slight,* as when a man is preſumed to be the writer of a paper, written in a hand that ſlightly reſembles his. *Strong*, when on a compariſon of both writings, by perſons unacquainted with his hand, and who never ſaw him write, it is inferred to be his hand, from its ſimilitude to a writing really his. This is admitted as a proof in civil caſes, but not in criminal, (Lofft's edition of Gilbert's Law of Evidence, vol. i. p. 53, 54.) Yet Buller, (in Trials at the Old Baily, vol. i. p. 232, †) denies that any difference ſhould be made between that which is legal proof in a civil action, and that which ſhould be received as ſuch, in a criminal proſecution: but the preſumption is ſaid to be *violent*, when a writing is aſcribed to a man, by perſons who ſwear themſelves acquainted with his hand,

* See Peake's caſes at *Niſi Prius*, 20, and his law of evidence, p. 102.

† Yet is not a Quaker's affirmation good evidence in civil caſes, though not in criminal.

and

and without requiring any compariſon ſwear the writing to be his, and who have ſeen him write. The proof from the *ſimilitude* of hands reſts on this fallacious maxim, that ſimilar effects muſt proceed from one and the *ſame cauſe*; whereas the maxim is, that ſimilar effects proceed from ſimilar cauſes, (See Newton.) It is true that it *rarely* happens that two men ſhould write exactly in the ſame manner; it is therefore *probable*, that ſimilar writings proceed from the ſame perſon. (See 1 Lofft's Gilbert, p. 53.) So a receipt of the laſt rent forms a violent preſumption, that the former rent was paid: this preſumption is founded on the experienced order in which ſuch events ſucceed each other. So if a man is found dead in a room, and another is ſeen running out of it with a bloody ſword, (2 Hawk. P. C. 618,) this is grounded on the relation of cauſe and effect; yet, in my opinion, other circumſtances ſhould concur; for the cauſe, abſtractedly taken, is ambiguous; for it might be that he was running for a ſurgeon, for a man guilty of ſuicide, before death enſued.

Per Holt, a violent preſumption of a man's having

having done a fact, muſt be when a fact is done, and no other can be thought of to have done it; and this evidence is a ſtrong proof: a *probable* preſumption is no proof to rely on, unleſs added to a poſitive proof by witneſſes; (3 Caſes in Chancery, 105.) The *fact to ground* the preſumption muſt be proved, *belief* can never be received to ground a preſumption. (2 M'Nally, 416.)

SECTION II.

OF THE INDIRECT PROOFS OF PROBABILITY.

Theſe we have already ſaid to be credible teſtimony and authority.

Firſt, of the qualification or diſqualifications affecting the credibility of a witneſs.

445. The circumſtances or qualifications relative to a witneſs, and which conſtitute what is called his credibility, (as the want of them in any conſiderable degree do his diſability,) are, Firſt, *ſufficient knowledge* of the fact atteſted; Secondly, *diſintereſtedneſs*; Thirdly,

Thirdly, *integrity*; Fourthly, *veracity*; and, Laſtly, whoſe teſtification is given under *ſanction of ſuch an oath* as the witneſs deems obligatory: theſe conſtitute what is called his credibility. In ſome caſes the preſence of ſome of theſe circumſtances, if *not known*, may be preſumed, eſpecially where the ſanction of an oath intervenes, by the perſons who receive the teſtimony; in other caſes it ſhould be proved. The obvious defect of theſe qualifications in a witneſs, renders him *incompetent*, and the knowledge that the witneſs is poſſeſſed of them, evidently increaſes his credibility; how theſe principles are applied by our law, will hereafter be ſeen.

446. Firſt, *ſufficient knowledge*, power, and attention to obſerve the fact atteſted, and alſo that degree of acquaintance with the conſequences of his teſtimony as may render him more circumſpect; hence the teſtimony of young children, or ideots, or drunken perſons, ſhould not be received, nor that of perſons incapable of clearly explaining themſelves; nor is the teſtimony of perſons under the influence of paſſions ſo violent, as to induce them to fancy they ſee or perceive things in

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a point of view naturally ſuggeſted by ſuch paſſions, worthy of much credit; nor that of enthuſiaſts, fanatics, or outrageous bigots; nor ſhould the teſtimony relative to minute circumſtances of facts ſo long paſt, that the memory of them may be ſuſpected to waver, be much inſiſted upon. Hence alſo a teſtimony can only be had of facts, that are objects of ſenſe, and have been actually obſerved by the witneſs; hence hear-ſay teſtimony is in general rejected by our law, though there are ſome exceptions, and moreover the real and original witneſs in ſuch caſes is not sworn.

447. Secondly, *diſintereſtedneſs*. This quality is of great extent; for it comprehends not only an exemption of all fear of loſs or damage, in conſequence of the teſtimony and the abſence of all pecuniary intereſt, whether of the witneſs or of his connexions, but alſo of the gratification of his or their paſſions, or of thoſe of his ſect or party, more eſpecially in periods when party zeal is ſtrongly prevalent; yet there are many, who, from their ſituation in life, and known rectitude of character, cannot be ſuſpected of receiving an undue biaſs

bias from ſmall pecuniary conſiderations involved in the conſequences of their teſtimony, nor even from the intereſt of a party; hence the exiſtence of this qualification is more or leſs important, according to the credibility of the witneſs, according to the general eſtimation in which his character is held.

448. Hence alſo if the intereſt of the witneſs or of his connexions be not only not promoted, but on the contrary injured by the obvious conſequences of his teſtimony, his aſſertion, if there be no other exception to it, deſerves the higheſt credit.

449. Thirdly, *integrity:* this quality when its exiſtence is well eſtabliſhed, affords the firmeſt aſſurance of a true teſtimony in all matters of importance, as it is inconſiſtent with the influence of any undue motives, as well as with a conſcious ignorance of the matter atteſted.

450. Laſtly, *veracity,* or an experienced diſpoſition to ſtrict adherence to truth. This in ſerious matters, is often further fortified by the ſanction of an oath, and a dread of the penalties conſequent on perjury; but it is well known, that oaths are of little uſe where integrity, or a ſenſe of religion is wanting,

eſpecially in caſes, wherein the practice of diſregarding or evading them has been long introduced, as in what is called Cuſtom-houſe oaths. In common caſes, love of the marvellous, or of a jeſt frequently prevails over this diſpoſition, and in many perſons habits of a contrary nature are firmly eſtabliſhed. Yet ſo natural is this diſpoſition to truth, that there are few that may not be credited in common caſes, where no motive of deviating from it appears.

Our knowledge of the *veracity* and the other qualifications of witneſſes, is generally acquired by experience, or inferred from their approved conduct and general character, and often from their ſtation in life.*

451. The next indirect ſource of probability, is *authority*; and this is either regular or irregular.

452. By regular authority I mean, that to which it is reaſonable that others ſhould ſubſiſt in doubtful caſes, and alſo in caſes where the opinion propoſed by authority being probable, is not oppoſed by an opinion apparently ſtill

* Lord Camden's Argument in Hindſon and Uxor, v. Kerſey, and 1 Lofft, 296.

more

more probable. Thus the opinions of men eminent for their ſkill in any art or ſcience, afford an indirect proof in caſes in which, through ignorance, no probable opinion could otherwiſe be formed; and alſo frequently adds a deciſive weight to opinions, otherwiſe known to be probable, and not oppoſed to opinions apparently ſtill more probable, or by an equal authority. Thus whether a wound be mortal or not, muſt be decided by the authority of ſurgeons, unleſs contradicted by other ſurgeons: whether a perſon was poiſoned, muſt be decided by phyſicians: but if the former ſhould decide that a ſcratch was a mortal wound, or the latter, that a perſon could be poiſoned by incantations, or medicated ſmells, their deciſions ſhould not be regarded.

453. Facts apparently intrinſically improbable, and even really ſo in common and known circumſtances, may yet be proved to be certain in new or previouſly unexperienced circumſtances. Thus, nothing can be ſuppoſed more improbable or leſs expected, than that a man ſhould be frozen to death though expoſed to the ſun on a ſummer's day; or that one liquor ſhould be ſet in a blaze on

the coldeſt winter's day, by mere mixture with another liquor equally cold; or that ſpirit of wine ſhould be ſet on fire by the approach of a piece of ice. Yet, all theſe facts, and many more equally ſtrange, are *certain*, and therefore may be credited on reſpectable authority, when alleged to happen in circumſtances unknown to, and conſequently not contradicted by the experience of thoſe who are required to credit them.

454. The confidence which we may have in the various ſpecies of authority, has been ſhewn, No. 363, &c. and 380, &c.

455. By irregular authority, I mean that of *common fame*; that is an account or opinion of ſome event or other object, generally current in ſome town, diſtrict, or country, whoſe origin or progreſs has not, or cannot be accurately aſcertained, or when it relates to the character and conduct of individuals, and being uncontaminated by malignity or party prejudice, is the reſult of general obſervation.

456. The credibility of common fame, like that of every other teſtimony, varies with, and is affected by the cauſes that gave birth to it. Sometimes it originates in ſuperſtition or bigotry,

bigotry, love of the marvellous, envy, partiality to one's own country, or party civil or religious, or hatred or contempt for other countries, or of the oppoſite parties. In ſuch caſes, it is plain it deſerves to be rejected with either pity or indignation; pity when attributable to ignorance, and indignation when fomented by malignity.

457. But when no ſiniſter motive can be aſſigned to its origin and progreſs, and the fact to which it relates is probable, and of recent date, and the perſon, whoſe reputation it conſtitutes, reſides among thoſe among whom it exiſts, and his known conduct conformable thereto, it conſtitutes a high degree of probability. Some facts are of publick notoriety, as whether we are in war or peace: theſe are indeed triable by jury, but require no other evidence. Foſter's Diſcourſe on Treaſon, cap. 2. ſec. 12. The internal probability or improbability of a fact, ſhould always outweigh common fame.

458. When even the reports of any particular event, are not only headleſs, but vague or inconſiſtent, yet if they do not evidently ariſe from ſome ſuſpicious motives, they

ſhould neither be abſolutely diſcredited nor implicitly believed: on the contrary, if the facts be of any importance, they deſerve attention, and form a ſufficient inducement to inſtitute a ſtrict inquiry.

459. Having thus diſcuſſed the indirect ſources of probability ariſing from the teſtimony of witneſſes, whoſe credibility is duly aſcertained, it might be expected, that the effects of concurrent, ſucceſſive, and contradictory teſtimonies, ſhould next be explained; but as theſe effects will more clearly be underſtood, after the conſideration of the effects of teſtimony, applied to objects differently connected with our experience, and alſo after explaining the application of calculation to the different degrees of probability and credibility, this ſubject is reſerved for a ſubſequent ſection.

SECTION III.

OF THE CREDIBILITY OF TESTIMONY WHEN GIVEN TO FACTS MORE OR LESS CONFORMABLE WITH, OR ADVERSE TO EXPERIENCE.

460. I muſt here premiſe that by *our experience*, I underſtand not ſolely our perſonal and individual experience or obſervation, which, in the greater part of mankind, are neceſſarily confined within very narrow limits, but alſo that maſs of adventitious knowledge, derived from the general and uniform experience of all ages and countries; which being conveyed to us by multiplied and uncontradicted teſtimony, and harmonizing with our own perſonal experience, as far as this extends, aſſimilates with it, and is relied upon with the ſame degree of confidence as we repoſe in that, which is in the ſtricteſt ſenſe our own.

461. Thus, thoſe who have never ſeen a dying or dead man, are nevertheleſs as fully

convinced, by mere teſtimony, of the mortality of mankind, as thoſe who have ſeen thouſands expiring or deprived of life.

462. To eſtimate the credibility of a teſtification applied to objects or events more or leſs conformable to their internal probability or certainty in given circumſtances, I muſt, in the firſt place, lay it down as an indiſputable truth, that the credit of a ſingle witneſs, however apparently qualified, may be diminiſhed and even annihilated by the improbability of the fact or object he vouches; at leaſt when both the fact and teſtimony are unattended with the circumſtances that ſhould naturally accompany them, or reſult from them: and the reaſon is, that the improbability of the fact often ariſing from its oppoſition to a truth univerſally received and acknowledged, the qualifications forming the credibility of the witneſs who conteſts it, can ſeldom be ſo clearly diſcerned, nor conſequently can the truth of his atteſtation be rendered ſo apparent of the truth of the fact he atteſts; beſides internal probability is founded on preceding general teſtimony.

463. Thus if any one ſhould tell me, he had

had met with a man ſomewhat above ſix feet high in this town, I ſhould readily believe him; but ſhould he tell me he met with a man ſixty feet high, I ſhould as certainly diſbelieve him, let his credibility be apparently ever ſo well eſtabliſhed; the former fact not being unuſual, and the latter in the higheſt degree extraordinary. So extraordinary indeed, that the ſuppoſition of its atteſtation by any highly credible witneſs, ſhould not be admitted, if ſtated ſingly, and diveſted of corroborating circumſtances.

464. Hence the nature of the ſeveral facts offered to our conſideration, viewed as connected with their ſeveral circumſtances, in the relation in which they ſtand to our experience, whether perſonal or adſcititious (which relation conſtitutes what is called their *internal probability* or improbability,) muſt firſt be diſtinguiſhed and examined, before we can aſcertain the alteration which an affirmative or negative teſtimony, of any kind, can make in their credibility.

The probability of an atteſted fact or teſtimony, is directly as its internal probability, and the credibility of the perſon who atteſts it.

Facts

Facts conſidered relatively to paſt experience, may be reduced to the following claſſes.

465. Firſt, *certain*, are thoſe that are already known to exiſt, or to have exiſted, or that in future muſt exiſt in given circumſtances, agreeably to general, univerſal, conſtant, and unvaried experience, or undoubted teſtimony, as thoſe that reſult from the laws of motion, gravitation, liquidity, optics, the mortality of all known animals, &c.; yet the reſults of theſe laws can with certainty be inferred only in caſes and circumſtances, in which, by previous experience, they were heretofore obſerved to take place; in particular inſtances and in abſolutely new circumſtances, events otherwiſe to be expected, are reducible to the fourth claſs. Thus iron is raiſed, contrary to the law of gravitation, by a magnet, dead animals are made to move by galvaniſm, gold and moſt metals are diſſolved by mercury, &c.

466. Secondly, *probable*, thoſe which are ſimilar to ſuch as happen much oftener than they fail; and of which our aſſurance of their having happened, and of their future happening, is proportioned to the exceſs of the number

ber of times they have, in ſundry trials, happened, over the number of times they have failed, in ſimilar or analogous circumſtances. Thus it is much more probable, that a healthy child ſhall live ſix years, than that he ſhall die before that age; but if he be ſickly, or if a contagious diſorder prevails, &c. the probability is much altered. It is more probable that on a common die, ſome number higher than an ace ſhall be thrown; it is otherwiſe, if the die be loaded on the ſide oppoſite the ace. If the mercury in the barometer riſes above the height ſuited to the elevation of its ſituation over the level of the ſea, there is a probability of fair weather, &c. &c.

The ſcale of probability is very extenſive; it is in the higheſt degree probable, that a healthy man of thirty years of age ſhall live another day, leſs probable that he ſhall live another year, and ſtill leſs probable that he ſhall live ten years longer. The internal probability of facts of ancient date, is grounded on their ſimilitude or analogy to modern facts of the ſame nature.

467. Thirdly, *equicaſual*, by ſome called *indifferent*

indifferent events: theſe are ſuch, with regard to which our experience is, as it were, indifferent, as they have as often happened as failed, and failed as happened.

Thus on projecting a die, whether a number higher than a tray ſhall be turned up, is equicaſual, as there are three faces indicating higher numbers, and three indicating numbers lower than a four; whether on the fall of a piece of money, a head ſhall appear; whether a man has made a will or died inteſtate, &c.

468. Fourthly, *neutral*; that is, neither agreeing with, nor diſagreeing from general experience. Of this claſs were all new facts previous to their diſcovery; as the exiſtence of America; of various iſlands in the Southern ocean; of various ſemi-metals; the powers of gunpowder, of various menſtruums and other chymical products, as phoſphori, &c.; teleſcopes, microſcopes, &c.; electrical, magnetic, and galvanic properties, &c.: moſt of theſe powers, it is to be remarked, are exceptions, in particular caſes, to general experience, in common circumſtances; but ſince ſuch facts have been aſcertained, ſimilar facts have attained a ſhare, though a low ſhare, of probability. Thus it

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is now probable, that there are ſtill ſome iſlands, as yet undiſcovered, in the unexplored tracts of the ocean; that there are ſtill ſome undiſcovered ſemi-metals, and that there are ſtill ſome as yet unknown powers in nature. And of this kind are the various powers of inſects or worms, far diſagreeing indeed with the powers of other animals, to which they bear but a ſlight analogy: their properties ſhould therefore excite leſs wonder than they have done, having been, before the laſt century, as little explored as the iſlands in the Southern ocean. Such are for inſtance the multiplication of polypi by diſſection, the metamorphoſes of caterpillars, &c.

469. Fifthly, *improbable*, of which there are the following ſpecies.

470. Firſt, *any determinate event among numerous, equally poſſible*; as what particular face of a die ſhall, after projection, be turned up. It is evident that this improbability does not proceed from experience, but merely from the equal claim of each of the faces to our expectation, as has been ſhewn, No. 426 and 433. And conſequently the more numerous ſuch events are, as in a lottery, conſiſting of

20,000

20,000 or 50,000, &c. tickets, the leſs probable will be the drawing of any particular number.

471. Secondly, *the extraordinary*, that in the common courſe of nature have indeed happened, but rarely and only among large maſſes of mankind, ſuch as the birth of *twins* of the human ſpecies; they are therefore exceptions, but well-known exceptions, or at leaſt analogous to ſuch exceptions of the commonly experienced courſe of nature. Such exceptions are improbable in different degrees, according to their greater or leſſer frequency; of theſe, the moſt rare in animal and vegetable nature, are called *preternatural*, ſuch as *monſters*.

472. Where no known courſe of nature is eſtabliſhed by experience, (as it is well known to be in animal and vegetable nature,) any new natural event is eſteemed a *prodigy*, until it has been frequently repeated, as *earthquakes* and *volcanoes*: theſe, in countries where they have been long experienced, though they rarely happen, are ſcarcely deemed extraordinary; ſuch at leaſt is the caſe of ejections from known volcanoes, as

Ætna

Ætna and Veſuvius; nay, their ceſſation for an unuſual period would be deemed extraordinary; but ſuch events, in countries where they have not as yet happened, would be deemed extraordinary, and highly improbable.

473. In moral nature, unuſual inſtances, either of virtue or exceſſes of vice, are improbable, though in different degrees, according to the circumſtances, education, laws, and habits of different nations. So alſo are extraordinary exertions of fortitude, as thoſe exhibited by the American ſavages; and of ſuperſtition, as that of mothers ſacrificing their children to Moloch; and of falſe honour, as that of the Bramin women; all of which would appear improbable, if ſome equally abſurd practices, as ſacrifices to general opinions, had not daily prevailed among ourſelves.

474. Thirdly, *the extravagant*; that is, thoſe that lie far beyond the known limits of animal or vegetable powers. Such as the change of different ſpecies of known vegetables into each other; the age of man having, in any inſtance within theſe laſt 4000 years, been extended

extended to 200 years; or of any man's having attained the height of twenty feet, &c. no inſtance of ſuch events having been known or well atteſted.

475. Fourthly, *the unnatural*; ſuch as facts contrary to our natural inſtincts: ſuch as the hatred of parents to their children, or of children to their parents, and other unnatural exceſſes. Theſe inſtances, except in maddening extremities, ſuch as induced mothers even to devour their infants, are comparatively few. The deſtruction of parents in old age, among ſavage tribes, reſulted not from hatred, but to ſave them from evils, which they judge ſtill greater, and was frequently, if not always, demanded by the parents themſelves. Infanticide among the Chineſe, reſulted from the apprehended impoſſibility of maintaining them.

476. Fifthly, *the ſupernatural*; theſe are events, which are totally unconnected with corporeal nature, and therefore cannot be ſaid to agree, or diſagree with its laws. Of this ſort, are the apparition of angels, prophetic viſions, ecſtatic perceptions, and inſpiration, frequently mentioned in holy writ.

477. The

477. The internal probability of ſuch events, cannot therefore be deduced from experience, which is merely converſant with events of a corporeal nature, but muſt be deduced partly from moral conſiderations, ſuch as their ſuitableneſs to the moral attributes of the great Author of nature, and partly from their connexion with ſubſequent natural events, of which we have a moral certainty; thus the reality of the ſupernatural information of Daniel, was evidently proved by the completion of his prophecies.

478. Sixthly, *miraculous* events are ſuch as are effected by means, which univerſal and uniform experience has ſhewn to be naturally inadequate to their production,* and therefore in the higheſt degree improbable. They differ from extraordinary events, ſuch as thoſe reſulting from the previouſly unſuſpected powers of magnetiſm, electricity, galvaniſm, &c. inaſmuch as theſe take place in previouſly untried circumſtances; whereas, miracles are ſuppoſed to take place, by means whoſe inefficacy had before and

* Auſtin agrees with me in this definition. See Tournely de Incar. p. 206.

ſince been fully aſcertained; but though they are repugnant to the well-known laws of nature, yet they are evidently poſſible to the great Author of nature; and an undeniable inſtance of the exertion of ſuch power, once at leaſt ſince the creation of this globe, may be deduced from the traces of the deluge, apparent in moſt mountains, independently of all teſtimony.

479. Seventhly, the *abſurd*, namely thoſe fictitious events, which ſuppoſe the exiſtence of order or regularity, without the intervention of any cauſe to effect the production of either; thus if we ſhould ſee a die, in numerous trials, conſtantly turning up the ſame face, (ſuppoſe an ace,) could we doubt that there was not in its interior, ſome particular cauſe that gave it that bias. If we had ſeen that face turned up three times ſucceſſively, we ſhould begin to ſuſpect the exiſtence of ſuch a cauſe; if four times, our ſupicion would be ſtronger; if five times, we ſhould think it highly probable; if ſix times, we ſhould deem it ſtill more probable; and if ſtill oftener, abſolutely certain.

It has been proved by Bernouilli, *ars conjectandi*,

laudi, that if the drawing of lottery tickets were continued to infinity, the ſame numbers would appear on an equal number of times. (Lambert, 113. See alſo p. 114, 115.)

480. Thus in philoſophical experiments, if we obſerve the ſame reſult in ten different trials made in the ſame circumſtances, we entertain no doubt but this reſult proceeds, not from any accidental, but from a permanent cauſe. And the reaſon is, that accidental cauſes being eſſentially variable, muſt in numerous trials, if they alone interfere, produce effects equally variable; for the ſame reaſon that permanent cauſes, acting alone, muſt produce permanently ſimilar effects.

481. I may be told that the chance of throwing an ace a ſecond time immediately, is exactly the ſame as that of throwing it the firſt time, and that the paſt caſt has no influence on the ſucceeding. All this I acknowledge, but I affirm, that the reiterated appearance of the ſame face, not only a ſecond time, which may be fortuitous, but a third, a fourth, and a fifth time, &c. without interruption, clearly indicates the agency of a permanent cauſe, and baniſhes all ſuſpicion of chance.

 482. And

482. And here I am compelled to notice ſome aſſertions of a late highly reſpected writer,* which appear to me unreaſonable. He tells us that he thinks it poſſible that the tickets of a lottery conſiſting of 50,000 numbers may be drawn in their numeral order, as 1, 2, 3, 4, &c., a ſuppoſition that to me appears abſurd, as it implies that of blind cauſes acting in a regular manner; as well might he ſuppoſe that Virgil's Æneid might be produced, by gradually taking the letters that compoſe it, out of an unſeen heap, in which they were all confuſedly mixed; or, as a judicious critick has well obſerved, that a thouſand aces may be caſt from a bag containing a thouſand dice;† and yet the chance of an ace on each die, is the ſame as that of any other face, but the *agreement* of all of them, in exhibiting the ſame face, cannot be attributed to chance, nor conſequently be ſuppoſed.

According to Dr. Price, any ſeries is as improbable as the orderly ſeries; this I take to

* Price, Differt. 3d edition, p. 424.

† XXX vol. Monthly Review Enlarged, 6. See alſo Rei, 4to. 624, and Mem. Berlin, 1767, p. 386.

be

be a miſtake, for of the orderly ſequences, few are poſſible, but of the diſorderly, the ſequences are innumerable. By *orderly*, I mean thoſe that have a connexion with each other, as 6, 7, 8, &c.; for 6 preſuppoſes 5, 7 preſuppoſes 6, and 8 preſuppoſes 7, &c. as immediately preceding it. *Order* ſuppoſes a continued uninterrupted relation of the ſame kind, each number exceeding the preceding by an unit.

483. Secondly, he aſſerts, that drawing a lottery in any particular aſſigned manner, is equally improbable: it undoubtedly is ſo, if the manner was *previouſly* aſſigned, for that would argue a connexion between our conceptions, and the ſeries of the numbers exhibited; a connexion which is not only improbable, but impoſſible, if other means of producing it be not employed, beſides blind chance.

484. Thirdly, he thinks it poſſible that the number firſt drawn in a lottery, may be gueſſed; and this, though highly improbable, I believe, may chance to happen, juſt as dreams are ſometimes verified. There is no abſurdity in ſuppoſing a coincidence in a

ſingle inſtance, though there is in ſuppoſing a train of ſuch coincidences.

485. *Mixed:* theſe are ſuch as preſent a complication of acts of different degrees of probability; thus a bequeſt of a man's eſtate to his children, implies, firſt, an *indifferent* act, namely, his making a bequeſt, but that this bequeſt ſhould be in favour of his children, is a *probable* event; ſo that he ſhould bequeath his eſtate to his known enemy, involves an indifferent and an improbable fact. Such diſtinctions ſhould carefully be attended to.

486. From what has been obſerved concerning the qualifications of a witneſs, from No. 445 to No. 450, we may conclude that they may all be reduced to *integrity* and *knowledge*; for integrity comprehends both veracity and diſintereſtedneſs, or at leaſt diſregard of any influence proceeding from any reſulting intereſt of any ſort.

487. Secondly, as our knowledge of the preſence or abſence of theſe qualifications is more or leſs perfect, witneſſes may be conſidered as *credible* in various degrees, or *doubtful*, to ſupply, as much as poſſible, any deficiency

ciency in the former, and remedy, as much as poſſible, the uncertain credibility of the latter. Courts of juſtice ſuperadded the ſanction of an oath; unhappily, in many caſes, a weak ſubſtitute. Q. the propriety of affording equal credit to the affidavits of known and unknown perſons? the teſtimony of perſons, evidently defective in any of theſe qualifications, being unworthy of belief deſerves no notice: theſe conſiderations being premiſed, I ſay,

488. A *certain* fact is no way affected by any affirmative teſtimony; that is, no teſtimony can *now* increaſe the certainty we already have of its exiſtence, though this certainty was originally derived from teſtimony. Thus the teſtimony of a thouſand travellers does not increaſe the aſſurance we already have of the exiſtence of Paris, Rome, or Madrid, &c.

489. Neither is the moral certainty of an event or object, when duly obtained, altered by the *denial* of a witneſs of the higheſt credibility, for the period during which we have that certainty of its exiſtence (if ſuch a caſe can be ſuppoſed;) thus no teſtimony can

diminiſh the certainty we have of the exiſtence of Paris laſt month, or of Babylon 2500 years ago; but if a witneſs of high credibility ſhould aſſure me that Paris was deſtroyed by an earthquake fifteen days ago, I might believe him, independently of the neceſſary ſequel of circumſtances, as I have no certainty, but only a high probability, of its exiſtence in ſo near a period.

Of Probable Facts.

490. If the exiſtence of a probable fact be *affirmed* by a credible witneſs, its probability is increaſed; for here two different independent probabilities concur, in eſtabliſhing its belief.

491. But if it be *denied* by a credible witneſs, ſome diſtinctions occur. If it be denied by a witneſs (that is a perſon who, if the fact exiſted, ſhould, as he aſſerts, have perceived it,) whoſe credibility is *equal* to the probability of the fact, then its exiſtence becomes *doubtful*, for two equal contradictory probabilities deſtroy each other. See No. 519, and 567.

If

If it be *denied* by a witneſs whoſe credibility is *inferior* to the probability of the fact, its probability is diminiſhed, but not deſtroyed. This diminution is found, not by ſubtraction, but by a very different proceſs, as will hereafter be ſeen. (See No. 561, and 568, and 628.) If it be *denied* by a witneſs of *ſuperior* credibility, then it becomes either leſs probable or improbable, for his credibility either diminiſhes or outweighs its probability, according to its degree of ſuperiority. See No. 569.

492. If a probable fact be affirmed or denied by a witneſs, of whoſe credibility we juſtly entertain any *doubt*, its probability is no way altered; for to eſteem it more or leſs probable, in conſequence of ſuch teſtimony, would argue a credit given to it, of which we profeſs to doubt, and the chances of being deceived, are juſt equal to the chances of not being deceived. See No. 564, 565.

Of Indifferent or Equicaſual Facts.

493. As facts of this kind as often agree as diſagree with preceding experience, or nearly ſo,

ſo, the teſtimony of *any credible witneſs*, to their having happened or failed in any particular inſtance, is ſufficient to eſtabliſh the belief of either; their probability is juſt equal to the credibility of the atteſting witneſs; but if denied by ſuch a witneſs, they become improbable. No. 570, 571.

494. But the teſtimony of a *doubtful* witneſs is of no effect, as already obſerved. No. 492, and Poſt. 564, 565.

Of Neutral Facts.

495. Theſe form a middle claſs between the improbable and the probable; if the neutral fact derives no ſupport from either experience or analogy, it cannot be deemed probable in any degree; but as it contradicts no experience, it cannot be deemed improbable; hence it can be rendered probable, only by the teſtimony of a witneſs of *high credibility*.

496. If its exiſtence be denied by a witneſs of *high credibility*, after repeated trials in circumſtances adequate to its diſcovery, it becomes improbable, ſuch as the exiſtence of ſome

ſome iſland in a given latitude and longitude.

497. If it bears any analogy to facts already known, it poſſeſſes a ſhare of internal probability, proportionable to that analogy, and may be believed on the teſtimony of a credible witneſs; thus the congelation of mercury was credited on the atteſtation of Gmelin, and the identity of lightning and electricity on the teſtimony of Franklin. Yet if the exiſtence of ſuch facts be denied by a witneſs ſtill more credible, and on ſufficient grounds, it becomes at leaſt doubtful; if it bears no analogy to any known fact, and has eluded repeated trials, (as the tranſmutation of metals,) it muſt be deemed improbable.

Of Improbable Facts.

498. Under this head I comprehend, not only poſitive facts, but alſo the *failures* of probable facts.

499. And here we muſt recur to the diſtinction already noticed, (No. 426, and 433,) betwixt *caſual* improbability, and improbability

lity grounded on a deviation from experience, which I therefore call *empiric*.

Of Casual Improbabilities.

500. The drawing of any particular number in a lottery, is as improbable as the drawing of any other; yet, as it is certain that some number must be drawn, the testimony of any *credible* witness, that it was drawn or not drawn, is sufficient to render it probable, that it was or was not, and establish such belief. It is in reality an indifferent fact.

Of Extraordinary, Extravagant, and Unnatural Facts.

501. If such facts be vouched by a witness, whose credibility is barely *equal* to the improbability of those facts, they become *doubtful*, as the opposite probabilities counterbalance each other. Post. No. 574.

502. If vouched by a witness, whose credibility is *inferior* to the improbability of the facts, this is indeed lessened, but not destroyed. Post. No. 576.

503. But

503. But if facts of this nature are vouched by a witneſs whoſe credibility is *greater* than the improbability of the fact atteſted, they then become probable, or at leaſt leſs improbable in proportion to the credibility of the witneſs. Doubtful teſtimony, neither increaſes nor diminiſhes its improbability.

504. If facts of this nature are *denied* by perſons deſerving *any credit*, they become ſtill leſs probable, and *a fortiori* if denied by perſons of high credibility.

Supernatural Facts.

505. Events of this nature, abſtractedly conſidered, and atteſted only by the perſon who affirms he has experienced or obſerved them, cannot be rendered probable by his atteſtation, however credible, in vouching events naturally poſſible; unleſs it be *certain* that he was endowed with ſupernatural powers. Thus the viſions of St. Paul, when elevated to the third heaven, though unconnected with any other events, yet may be conſidered as *certain*, from the certainty of his poſſeſſing ſupernatural powers.

506. But

506. But the viſions of Mahomet, from the certainty of his being wholly devoid of ſuch powers, are utterly improbable; nay, men of the moſt eminent piety may have their imagination ſo heated by long continued contemplation, as to preſent to them various illuſions which they deem realities, and atteſt with the greateſt ſincerity, and full perſuaſion of their truth. The deſire of promoting ſome good end, or at leaſt deemed ſuch, has frequently occaſioned the atteſtation of ſuch facts, by perſons otherwiſe of unexceptionable characters.

507. But if ſuch facts be rendered probable from moral conſiderations, and their connexion with other facts, of which no doubt can be entertained, they may be rendered *certain* by the atteſtation of any credible witneſs.

Of Miraculous Facts.

508. Theſe facts, being contradictory to laws grounded on general, univerſal, and otherwiſe uniform experience, cannot be proved by any atteſtation leſs than that, whoſe falſehood

falſehood would be no leſs miraculous, or in other words a *moral miracle*. No agent, whether natural or ſupernatural, can produce a moral miracle, therefore, a falſehood which would imply a miracle of this ſort, is abſolutely impoſſible; whereas a phyſical miracle, or the violation of the laws of corporeal nature in ſome, or indeed in any inſtance, is evidently poſſible to the great Author of nature, and therefore, in ſuch caſes commands our belief. What that teſtimony is, whoſe falſehood ſhould be deemed miraculous, has been explained, No. 357—361.

Of Abſurd Facts.

509. Theſe being metaphyſically impoſſible can be proved by no teſtimony whatſoever, being ſuppoſed to have proceeded from blind chance.

Of Mixed Facts.

510. Theſe muſt be proved by a witneſs, whoſe credibility is ſuperior to the improbability of the facts alleged.

SECTION

SECTION IV.

SOME OBJECTIONS TO THE FOREGOING ASSERTIONS ANSWERED.

511. Firſt, it has been inſiſted upon, that regard to teſtimony, is not owing ſolely to experience.* Certainly in childhood it is not, nor even in weak men, though advanced in years; but certainly it is among the more rational part of mankind, except in trivial matters; for inſtance, what road leads to ſuch a place, the name of the witneſs, &c.; and even in ſuch caſes, before we acquire ſome experience of the uſual veracity of unknown witneſſes, their information produces rather a ſuſpicion than belief. But in ſerious matters, rational men give no credit to unknown perſons. See Dr. Young's Eſſay on the force of teſtimony, vol. vii. Mem. Roy. Iriſh Acad. p. 96, and 99.

512. Secondly, it has been ſaid, that "a "miracle is more properly an event, *different*

* Price, Diſſert, 3d. ed. p. 398.

from

" from experience, than *contrary* to it; and " were I to ſee a tempeſt inſtantaneouſly " calmed by the word of a man, all my paſt " experience would remain the ſame.—I " could only ſay that I ſaw, what I never " before had any experience of." Yes I could ſay that to happen, which was contrary to, or rather contradicted, all that I and every other man ever before experienced, and which, if any certainty can be derived from experience, I was certain could never happen. Paſt experience informed me, that the voice of a man is incapable of ſtilling a ſtorm, but if my ſenſes inform me that on a particular occaſion, the word of a man was capable of calming a tempeſt, is not this a contradiction to all my paſt experience? it is as much ſo as any ſubſequent fact can be to preceding facts; were the ſun to riſe to-morrow in the weſt, would not this contradict all paſt experience? It is added, that " paſt experience is merely " *negative*." It muſt be ſo, to be contradicted by a *poſitive* fact. Dr. Franklin's experiment of ſtilling waves by oil, is a fact differing from experience, but not contrary to it, as it had

not before been tried, and conſequently not miraculous.

513. Thirdly, it is aſſerted, that "all "common facts are improbable, indepen- "dently of teſtimony." Yet do I require any teſtimony to prove, that ſtones projected upwards, have fallen 2000 years ago as they do now? the only inſtances mentioned, relate to particular contingent facts, whereas the queſtion here relates to general facts, aſcertained by univerſal and uniform experience; contingent facts, unſupported by teſtimony, are merely fictitious; this is the true reaſon of their improbability.

514. Fourthly, to prove the falſehood of the principle laid down, No. 502, namely, that no teſtimony ſhould engage our belief, unleſs the improbability of its falſehood is greater than that of the event atteſted,* the following ſuppoſition is made.†

"The end of a newſpaper confines it in great meaſure to the relation of ſuch facts as are uncommon. Suppoſe that it relates truth

* Price, Differt. 3d. edit. p. 405. † Ibid. p. 409.

only

only twice in three times, and that there are *nine* ſuch uncommon facts reported by it, as that a certain perſon is alive in his hundredth year; that another was ſtruck dead by lightning, or that a woman has been delivered of three children at a birth; would it be right to reject all theſe facts, becauſe more extraordinary than the falſehood of the newſpapers? to ſay this, would be to ſay, that what by ſuppoſition reports truth ſix times in nine, does not report truth once in nine times."

515. This difficulty, which ſeems ſo plauſible, is eaſily removed: in the firſt place it is denied that the end of a newſpaper confines it in great meaſure to uncommon facts; on the contrary, theſe ſeldom occur in it, and even nine ſuch facts as are abovementioned, would not fill half a column. Therefore, if a newſpaper is known to report truly twice in three times, this obſervation relates chiefly to reports of common facts, and theſe are not improbable, otherwiſe they could not be called common; even with reſpect to theſe, the credibility of the newſpaper rates very low, being only 0.666, while certainty is denoted

by one, whereas the leaſt improbable facts cannot be rated higher than 0.499, &c.

516. Secondly, that the credibility of a newſpaper cannot be the ſame with reſpect to common and uncommon facts, is evident from the credit given to ancient hiſtorians, when they relate common facts, and its refuſal, when they relate uncommon facts: and lately in the caſe of Admiral Byron, every one believed the common nautical facts he atteſted, but few believed his account of the ſize of the Patagonians. So if a newſpaper reports common facts truly, only twice in three times, its credibility muſt be much lower, when it relates uncommon facts.

517. Thirdly, ſuppoſing its credibility even in reporting uncommon facts, to be as two to three. Yet this meaſure muſt be applied to each uncommon fact, and not to the nine taken together, as is evident, for it muſt be ſo applied even to one *ſingle* fact of that kind, if only one is reported: this entirely deſtroys the author's ſuppoſition.

518. Fourthly, the facts alleged by the author, are not all equally improbable; thus that ſome particular unknown man is now alive

alive in his hundredth year, though not common in ſmall maſſes of mankind, is not uncommon among large maſſes; for, by the bills of mortality in London, it appears that one man in 20,000 attains that age; and as London contains 900,000 inhabitants, there are among them forty-five that attain that age. If the newſwriter ſhould report, that there was now living, a man that attained his *four hundredth* year, would any one believe it? Therefore credit is always given or refuſed, according to the probability or improbability, or indifference of the fact reported, by all cautious and rational men.

519 and 520. The principle laid down No. 503, namely that the aſſertion of a doubtful witneſs does not alter the improbability of the fact, has alſo been denied.* It was held that an evidence that is often connected with truth, though not oftener than with falſehood is real evidence and deſerves regard; to me this poſition appears abſurd.

* Price, Ibid. 408.

SECTION V.

OF PLURAL TESTIMONY.

521. The application of this teſtimony cannot be clearly underſtood, until the mode of calculating probabilities is firſt explained.

CHAPTER VII.

OF THE APPLICATION OF CALCULATION TO PROBABILITY.*

SECTION I.

OF THE CHANCES OF EVENTS.

522. The known poſſibility of any event is called a *chance*; and where there are ſeveral known cauſes equally capable of producing different events, it is inferred that there are as

* See Prieſtley's Hartley, p. 169,—171.

many

many *chances* of thoſe events; and when it is known that ſome or other of thoſe cauſes have acted, or muſt neceſſarily act, thoſe chances have been, in a looſe way and improperly, called *probabilities* by writers on the doctrine of chances.

523. The doctrine of chances is that, which from a given number of events equally poſſible, (as far as we know,) infers the probability or improbability of each, or of the combinations of each, and alſo from a certain number of events, or combinations of events, infers their cauſes. The diſtinction of caſual and empiric probabilities has been already noted, No. 426.

524. Thus if we take a common die, and ſuppoſe the turning up of each of its ſix faces equally poſſible, it is *certain* that on projecting it, ſome one or other of theſe ſix faces will be turned up; for it muſt lie on ſome or other of theſe faces, and then the oppoſite face will appear, and hence each of theſe faces may be called the cauſe of the appearance of the oppoſite face: but as only one of theſe faces can ſhew an ace, the chance of throwing an ace, is only one chance out of ſix chances,

or $\frac{1}{6}$, and the odds againſt it are five out of ſix, or $\frac{5}{6}$ of a certainty.

525. Hence *the general rule is*, that if among a certain number of equal poſſibilities or chances, there are ſome favourable to a given event, that is, tend to produce it, and ſome adverſe to its production, or productive of a different or contrary event, the probability or improbability of ſuch event, is as the number of the favourable chances, divided by the ſum of all the chances, both favourable and unfavourable; as in the laſt example, there was only one chance of caſting an ace, and five chances of throwing other numbers. The ſum of both was $1 + 5$, that is 6.

526. Therefore the ſum of all the known chances, favourable and unfavourable, to an event, is equal to the ſum of all the poſſibilities of any event. And as thoſe that are favourable, are only a part or fraction of the whole number of poſſibilities, they are expreſſed by a fraction, as in the above example, and for the ſame reaſon, ſo may thoſe that are adverſe to it. Now the favourable and unfavourable together, make up the whole of the chances; therefore if the fractions expreſſing

preſſing each of them, be added together, they make up an *unit*. So in the above examples, $\frac{1}{6}$ added to $\frac{5}{6} = \frac{6}{6} = 1$.

527. Again, as in every caſe it is *certain* that a given event will either happen or not happen, all the poſſibilities favourable and unfavourable, are comprehended, and conſequently *certainty* is expreſſed by an *unit*; therefore the higheſt probabilities are thoſe that are expreſſed by fractions, that approach moſt to an unit, though none can ever reach it, for they would then ceaſe to be probabilities, being converted into a certainty, though ſome approach ſo near to it, that they are uſually taken for it, as the probability that the world will laſt another year, &c.

528. As certainty is expreſſed by 1, ſo is *doubt* or an equality of chances by $\frac{1}{2}$. So if in a covered box there are an equal number of black and white balls well mixed, and through a perforation in the box the hand be introduced, that one or other of theſe balls

☞ In the ſequel + denotes *more*, − denotes *leſs*, × denotes *multiplied*, and = denotes equal, and two or more letters ſubjoined denote the multiplication of thoſe numbers they ſtand for into each other.

will

will be drawn, is certain. And as the poſſibilities are only 2, the chance of drawing a white ball is $\frac{1}{2}$, and the chance of drawing a black ball is alſo $\frac{1}{2}$; and as thoſe poſſibilities balance each other, conſequently which of them will be drawn is uncertain or *doubtful.*

529. *Note,* the word *uncertain* is capable of two ſignifications, for we are uncertain when we doubt, and alſo when we are totally ignorant of any reaſon, whether of affirming or denying; for inſtance, whether the number of grains of ſand in a box is odd or even.

530. Hence the *probability* of an event conſiſts in the apparent *ſuperiority* of the poſſibilities, cauſes, or reaſons tending to produce the belief of its exiſtence over thoſe that are adverſe to that belief, and conſequently it is denoted by a fraction higher than $\frac{1}{2}$, as $\frac{2}{3}$ $\frac{3}{4}$, &c.

So the *improbability* of an event conſiſts in the apparent *inferiority* of the poſſibilities, cauſes or reaſons for believing its exiſtence, to thoſe that oppoſe them, and therefore it is denoted by a fraction lower than $\frac{1}{2}$ as $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{10}$, &c., remembering always, that the denominator of the fraction comprehends all the poſſibilities,

poſſibilities, &c. favourable and adverſe. And conſequently, by ſubtracting the favourable (which are found in the numerator) you have the adverſe.

Of Independent and Dependent Events.

SECTION II.

OF INDEPENDENT EVENTS.

531. An independent event is that, whoſe exiſtence has no connexion with that of another event. Thus throwing an ace on one die, does not affect the poſſibility of throwing it again on the ſame or another die.

532. But the poſſibility of a *joint event*, though each is independent of the other, ſingly conſidered, is affected by all the poſſibilities of failure in each of the conjoined events. Now there are thirty-ſix poſſible events on two dice, conſidered conjointly; for each has ſix faces, and each face of the one may be combined with the ſame or a different

different face of the other. Therefore the poſſible appearances are $6 \times 6 = 36$, but of theſe 36 combinations there is but one productive of the appearance of two aces, or any other two faces you pleaſe to name; therefore the chance of throwing two aces either together or ſucceſſively on one die is $\frac{1}{36}$; for though each event conſidered *ſeparately* is independent of the other, yet the poſſibility of the *joint* event neceſſarily refers to the poſſible joint reſults on each; for if at firſt you throw an ace, the chance of throwing a ſecond time is only $\frac{1}{6}$, but if you at firſt throw a *deuce*, &c. the joint event of throwing two aces becomes impoſſible.

533. Hence the general rule is, that the joint probability of two or more independent but joint events, is equal to the product of the chances of each. Thus the probability of throwing three aces ſucceſſively on one die, is, $\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{216}$, though ſuch an event would excite a ſuſpicion of ſome bias in the die.

534. So if the probability that one man, *A*, ſhall live a year, be $\frac{6}{10}$, and the probability of the

the life of another man, *B*, for one year be $\frac{8}{10}$, the probability that *both* ſhall live another year, is $\frac{6}{10} \times \frac{8}{10} = \frac{48}{100}$, which is remarkable; for thus we ſee that the concurrence of two events is leſs probable than the occurrence of either, and is even improbable, though each is probable, and totally independent of the other.

535. Hence the happening of *two or more doubtful* or equicaſual independent facts, is improbable, and the more ſo as they are more numerous, for the probability of each is $\frac{1}{2}$; therefore the joint chance of two ſuch facts, is, $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$, and of three ſuch facts is, $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$.

536. So the joint happening of two independent improbable facts is ſtill more improbable; for, ſuppoſing the improbability of one of them $\frac{1}{4}$ and the other $\frac{1}{5}$, then their joint improbability would be $\frac{1}{20}$.

537. So the improbability of the death of *A* within the year being $\frac{4}{10}$, and of the death of *B* $\frac{2}{10}$, the improbability that both ſhall die within the year, is $\frac{4}{10} \times \frac{2}{10} = \frac{8}{100}$.

538. And

538. And the probability that one of the events ſhall happen, and the other fail, is as the probability of the happening of the one, multiplied by the probability of the failure of the other. So in the above caſe, the probability that A ſhall live, and that B ſhall die, is $\frac{6}{10} \times \frac{2}{10} = \frac{12}{100}$; and the probability that B ſhall live and A die, is $\frac{8}{10} \times \frac{4}{10} = \frac{32}{100}$.

SECTION III.

OF DEPENDENT EVENTS.

539, A dependent event, is that probability whoſe happening or failure ariſes from, or is increaſed or diminiſhed by, the probability of the happening or failure of another event. Theſe events differ from *joint* independent events above mentioned in this, that the failure of one of the joint events prevents indeed the *conjunction* from taking place, but not the happening of the other event; whereas the happening of a dependent event is either promoted, or prevented, or rendered

leſs

leſs probable, by the happening or failure of another event.

540. Thus if a friend of mine has ſailed to Africa in a fleet of twelve ſhips, and three of theſe ſhips were loſt in a ſtorm, and $\frac{1}{3}$ of the crew of the nine ſhips that eſcaped the ſtorm, periſhed from the hardſhips they endured during the voyage, and on ſhore, and I inquire into the probability of his having eſcaped both dangers, then—

Firſt, it is plain that the probability of his having eſcaped the hardſhips endured during the voyage and on ſhore, depends on the event of his having eſcaped the ſtorm; conſequently the probability of this laſt-mentioned event is to be calculated firſt; for if it were found improbable (which it is not,) the ſecond event muſt fail; but if it be found probable, the ſecond event may alſo exiſt or not, according to the degree of its ſeparate probability, conjoined with that of the firſt.

541. Hence *the general rule is,* that the probability of the firſt or independent event being found, the probability of the ſecond, which depends on it, is next to be ſought, as if it were independent upon the firſt; but as, in fact,

fact, it is not independent upon it, but involved in it, this ſeparate probability is to be multiplied into that of the firſt event, and the product gives the real probability of the ſecond event.

542. If the firſt event be found improbable, the ſecond muſt fail, and if a third event depends on the ſecond, and the ſecond is found improbable, the third muſt alſo fail.

543. Thus, in the foregoing example, ſince nine ſhips out of the twelve eſcaped the ſtorm, the chances favourable to my friend's eſcape in one of them, are nine out of twelve; the probability then of his having eſcaped the firſt danger, is $\frac{9}{12}=\frac{3}{4}$. This being ſuppoſed, the probability of his having eſcaped the ſecond danger, ſince only $\frac{1}{3}$ of thoſe who ſurvived the ſtorm periſhed, is $\frac{2}{3}$; hence the probability of his having eſcaped both dangers, is $\frac{3}{4}\times\frac{2}{3}=\frac{6}{12}=\frac{1}{2}$; therefore it is merely doubtful, whether he has ſurvived both dangers. If only $\frac{1}{4}$ of the crew eſcaped the ſecond danger, then his ſurvival would be improbable, for $\frac{3}{4}\times\frac{1}{4}=\frac{3}{16}$. And, if only two

out

out of the twelve ſhips had periſhed, and conſequently ten had eſcaped the firſt danger; and $\frac{2}{3}$ of the crew had eſcaped the ſecond danger as above, then the probability of his ſurvival would be $\frac{10}{12}=\frac{5}{6}$, and $\frac{5}{6}\times\frac{2}{3}=\frac{10}{18}=\frac{5}{9}$, a ſlight probability.

SECTION IV.

OF THE PROBABILITY DERIVED FROM THE SIMILITUDE OF EVENTS.

544. This relates either to the paſt or future exiſtence of ſimilar events, or to the nature and properties of the cauſes of thoſe events: this laſt conſideration may be a ſubject of phyſical or metaphyſical diſcuſſion; the firſt only regards our preſent inquiry.

545. When the cauſes productive of different events, are either wholly or for the moſt part unknown, the probability of ſuch events, whether paſt or future, in ſimilar caſes, is deduced from their obſerved ſimilitude to each other, by a method of reaſoning exactly the converſe of that mentioned No. 525, 530; for,

as in the method there given, the probability of a given event was inferred from the ratio of the cauſes favourable to its production, to the whole number of cauſes favourable and unfavourable: in this caſe we infer the exiſtence and proportion of favourable and unfavourable cauſes, from the ratio of the number of ſimilar caſes in which the event happened, to that of the whole number in which it happened and failed; and then, from the ratio to each other, of the cauſes whoſe exiſtence has been thus evinced, we infer the exiſtence of a paſt or future effect of ſuch cauſes; ſo that here a double proceſs of reaſoning takes place. The firſt, conſidered indefinitely, is attended with metaphyſical certainty, for there can be no doubt, that every event requires a cauſe, as from nothing, nothing can proceed; but the *ſuppoſed* cauſe may in many caſes be only probable; and that cauſe muſt be ſuppoſed moſt frequently active, or thoſe cauſes muſt have been moſt numerous, whoſe effects have been moſt numerous and important; but the ſecond proceſs exhibits no *neceſſary* connexion between the known cauſes and their events, but only an expectation,

expectation, or opinion, or conviction of the exiſtence of a law, according to the conſtancy or variation of the events. It is a mode of reaſoning, to which we are, by nature, irreſiſtibly impelled, and indiſpenſably requiſite to the prolongation of our exiſtence, and fully juſtified by the conſideration, that the great Author of nature acts by general laws, which have never been altered without previous warning. See my obſervations on the ſceptical poſitions of Mr. Hume.*

546. Hence, in all caſes wherein we have obſerved the conſtant, and nearly uniform production of an event, we muſt infer, that in ſimilar circumſtances there do not exiſt any cauſes unfavourable to its exiſtence, and conſequently *almoſt a certainty* of its exiſtence; on the contrary, in caſes ſimilar to thoſe wherein the event has conſtantly been obſerved to fail, we have reaſon to judge, that there are no cauſes, or at leaſt no unobſtructed cauſes, favourable to its exiſtence, and therefore that its production is either *highly improbable* or *phyſically impoſſible*.

* Mem. Roy. Iriſh Acad. vol. VIII. p. 157.

 547. But

547. But where in caſes whoſe circumſtances are imperfectly known, as well as the cauſes or complication of cauſes, a conſiderable variation or diſcordancy of events has been long obſerved (as in the weather,) the probability of a particular event is deduced, partly from the ratio of events of this kind to their failures, or to events of a contrary or different kind, and partly from the ſimilarity or diſſimilarity of their circumſtances, and partly from their connexion with previous, or, if paſt, with ſubſequent events.

SECTION V.

OF THE PROBABILITY INFERRED FROM THE RATIO OF SIMILAR AND DISSIMILAR EVENTS.

548. When we know nothing of an event or of its cauſes, but that it has happened once in one trial, or one particular occaſion, there exiſts only a faint expectation or ſuſpicion of its happening again, on the ſame occaſion; for though an event of ſome kind may be expected, ſtill it is uncertain whether any will happen,

happen, or if any does happen, whether it will reſemble the former event; therefore the probability in this caſe is expreſſed by $\frac{1}{2}$, for in the numerator of this fraction, we have one favourable chance, and in the denominator we have that ſame favourable chance, and alſo one unfavourable chance that we may ſuſpect to happen, then we have $\frac{1}{1+1}=\frac{1}{2}$.

549. But if in two trials or caſes apparently ſimilar, two ſimilar events have happened, we feel a ſtronger expectation of a third ſimilar event in a third trial; yet with ſome ſuſpicion of an adverſe event. Therefore the numerator of the fraction that expreſſes this probability, will have two favourable chances from what has already happened, and the denominator thoſe ſame favourable chances, and the one unfavourable chance which is ſuſpected, and conſequently it is $\frac{2}{3}$.

550. And if in two trials the event has happened once and failed once, or a contrary event has happened, we feel no expectation whatſoever of its happening or failing in another trial, as both are equally contradicted by paſt experience, therefore its probability $= o$.

551. If in three trials three ſimilar events have happened, we feel a very ſtrong expectation of a fourth ſimilar event in a fourth trial; but ſtill alſo ſome ſuſpicion of an adverſe or a failure, therefore this probability will be expreſſed by $\frac{3}{4}$, and the expectation of a ſimilar event, is conſtantly augmented by ſimilar reſults in ſimilar trials, until it increaſes nearly to a certainty.

552. But if in three trials only two ſimilar events have happened and one failure, or a different event, then on a fourth trial, our expectation of an event ſimilar to two ſimilar events is weakened; then the numerator of the fraction that expreſſes the probability of a fourth ſimilar event, will have the two favourable chances from what has already happened, and one favourable chance expected, and the denominator will have the three favourable chances, and one unfavourable chance from the event that has happened, and alſo one unfavourable chance that may be expected from the experience of that which happened, therefore it will be $\frac{3}{3+1+1}=\frac{3}{5}$.

553. Thus, therefore, the probability of variable

variable events may be expreſſed; for if in a given number of trials, in the ſame circumſtances, an equal number of ſimilar events, and of their failures, or of differing events, have taken place, then the probability of any ſuch events $=o$.

554. But if the number of ſimilar events exceeds that of the failures of ſuch events, in the ſame circumſtances, or of differing events, then let the number of ſimilar events be m, and of the diſſimilar, or failures, be n. Then the fraction that expreſſes the probability of the ſimilar events will be $\frac{m+1}{m+1+n+1}=\frac{m+1}{m+n+2}$.

555. And the probability that n will happen, and m fail, will be $\frac{n+1}{m+n+2}$. It is plain that the above reaſoning relates to phyſical and moral events only, and not to caſual or aleatory events, for theſe I have not conſidered, as they are, if purely caſual, governed by no conſtant laws.

SECTION VI.

OF THE APPLICATION OF CALCULATION TO TESTIMONY, AND OF TESTIMONY TO FACTS.

556. The credibility of witneſſes is not eſtimated merely by the number of times the fact teſtified has been found conformable to their report, and the number of times in which their teſtimony was found to be falſe; for many perſons, either from want of attention to what they might have ſeen, or from a deſire of exciting ſurpriſe, do, at leaſt in trivial matters, frequently ſtray from truth; but from the knowledge we have, of their poſſeſſing the ſeveral qualifications mentioned No. 445, and which, for the greater eaſe of calculation, we have reduced to two, (No. 486,) named *integrity* and *knowledge*. Theſe qualifications are ſcarce ever poſſeſſed in ſo high a degree, that nothing can be added to them in any poſſible caſe, eſpecially if the ſanction of an oath is not ſuperadded; and

even

even if it be, yet from a defect of memory in ſome men, eſpecially as to old tranſactions, or from a defect of knowledge of the matter in queſtion, miſtakes may occur involuntarily. Hence theſe qualifications are poſſeſſed in various degrees, by different perſons, and even by the ſame perſon in different caſes. Plutarch is not entitled to the ſame credit, when he ſpeaks of Herodotus, as he is in other caſes. We muſt, therefore, form in our own minds an eſtimate of the degrees in which theſe qualifications are poſſeſſed, by different perſons, in particular caſes, and alſo of the degrees in which thoſe qualifications may be ſuppoſed to be *defective*. The former conſtitute the chances favourable to their credibility, and the latter the chances adverſe to it. By a deficiency, all that is wanting of any qualification to reach a certainty, that is, an unit, is meant.

557. Let the knowledge of the witneſs be denoted by k, and its deficiency k'. Let his integrity be denoted by I, and its deficiency by I', then his credibility will be expreſſed by by the fraction $\frac{kI}{kI+k'I'}$.

558. This

558. This formula requires no demonſtration: we ſee the favourable chances, namely the degrees, in which knowledge and integrity are ſuppoſed to be poſſeſſed, multiplied into each other, and placed in the numerator; and this product, added to the product of the deficient degrees multiplied into each other, is placed in the denominator, which thus contains the ſum of all the favourable and unfavourable *chances*. So I call the reaſons favourable or unfavourable to the credit of the witneſs.

559. This formula may be further abridged, by denoting the products of the favourable chances to the *witneſs*, that is k and I, or $kI = a$, and that of the unfavourable or defects, $= a'$.

Now to apply teſtimony to facts, let the chances favourable to the *fact*, be denoted by b, and the unfavourable by b'. (How theſe are found, See No. 430.)

560. Then to find the probability of the fact after an *affirmative* atteſtation, let the chances, favourable to the exiſtence of the fact, be multiplied into thoſe, favourable to the credit of the witneſs, and let this product be

be divided by the ſame product, and alſo by the product of the chances unfavourable to the exiſtence of the fact, into thoſe unfavourable to the credit of the witneſs; and thus the numerator will contain the product of the favourable chances, and the denominator, the ſum of the products, both of the favourable and unfavourable chances; conſequently, the formula for diſcovering the probability of a fact, after an atteſtation that affirms it, is $\frac{ba}{ba+b'a'}$.

561. If the atteſtation be *negative*, that is, if the witneſs *denies* the exiſtence of the fact, then let the chances *favourable* to the probability of the fact, be multiplied into the chances *unfavourable* to the credit of the witneſs, and let this product form the numerator, and let the chances *unfavourable* to the probability of the fact be multiplied into thoſe *favourable* to the credit of the witneſs, and let both products form the denominator of the fraction; then the formula is $\frac{ba'}{ba'+b'a'}$. This fraction gives the ſtate of the probability of the fact after its denial, by a credible witneſs.

562. Now to apply theſe formulas to the atteſtation

atteſtation of facts, let it be recollected, that all teſtimony is either *dubious* or *credible*, and either affirmative or negative of the fact. *Falſe* teſtimony, or that whoſe credibility is below $\frac{1}{2}$ cannot be admitted, as ſuch witneſſes are incompetent. And indeed, *dubious* teſtimony is uſeleſs, as will preſently be ſeen. The facts alſo, to which teſtimony is applied, are either *certain*, or *probable*, or *indifferent*, or *equicaſual*, or improbable in various degrees, (mentioned No. 498—504,) or *ſupernatural*, or *miraculous*, or *abſurd*, or *mixed*.

SECTION VII.

OF TESTIMONY APPLIED TO FACTS THAT ARE CERTAIN.

563. Facts which we conſider as certain, are either antient and long ſince paſt, or of modern date. The former being aſcertained by antient hiſtorians, are incapable of any addition or diminution, but by deſtroying the credit of thoſe hiſtorians. Such are the Argonautic expedition, the ſiege of Troy, the Roman

Roman hiſtory, previous to the taking of Rome by the Gauls, &c.—but facts of a recent date, rendered certain by the unanimous, and uncontradicted teſtimony of numerous living witneſſes, ſuch as the exiſtence of Pekin, or Iſpahan, &c. do not admit of any increaſe or diminution of their certainty by any teſtimony.

SECTION VIII.

OF TESTIMONY APPLIED TO PROBABLE FACTS, No. 490.

564. If the exiſtence of a probable fact be affirmed by a *doubtful* witneſs, its probability is not increaſed: for ſuppoſe the probability of the fact to be $\frac{6}{10}$, and the credibility of the witneſs $\frac{1}{2}$, then the chance favourable to the credibility of the witneſs is only one, and the chance unfavourable to his credit, is only 1, for $1+1=2$, which is the denominator of the fraction, which contains both the favourable and unfavourable chances. Now the chances favourable to the exiſtence of the fact, are ſix, and

and the chances unfavourable to its exiſtence, $=4$ $(10-6,)$ then the probability of the fact after atteſtation, is $\frac{1\times6=6}{1\times6+1\times4}=\frac{6}{6+4}=\frac{6}{10}$. Hence it is evidently ſuperfluous to apply the *negative* teſtimony of ſuch a witneſs, for it is equally incapable of effecting any alteration.

566. But if a probable fact, as $\frac{6}{10}$, is affirmed by a credible witneſs, whoſe credibility, for inſtance, is $\frac{6}{10}$, then its probability is increaſed; for the chances favourable to the credit of the witneſs are ſix, and thoſe unfavourable to his credit are four. So alſo the chances favourable to the object are ſix, and the unfavourable are four, then $ab=6\times6=36$, and $a'b'=4\times4=16$; conſequently the fraction expreſſing the probability of the fact after atteſtation, is $\frac{36}{36+16}=\frac{36}{52}=\frac{9}{13}$, which is an increaſe of the probability of the fact, for $9.13::6.8{,}66$; ſo that inſtead of $\frac{6}{10}$, we have $\frac{6}{8{,}66}$, and yet $\frac{6}{10}$ is a very low probability, and $\frac{6}{10}$ alſo a very low credibility.

567. If the probable fact be *denied* by a witneſs, whoſe credibility is juſt *equal* to the probability of the fact (as it was *affirmed* in the

the above caſe,) then the fact after atteſtation is found *doubtful*; thus, if a fact whoſe probability is $\frac{6}{10}$, is denied by a witneſs, whoſe credibility is $\frac{6}{10}$, then the formula No. 561, we have $ba'=6\times 4=24 b'a=6\times 4=24$; therefore the fraction expreſſing this probability, is $\frac{24}{24+24}=\frac{24}{48}=\frac{1}{2}$.

568. If a probable fact be denied by a witneſs of *inferior* credibility, as for inſtance, if a fact, whoſe probability is $\frac{8}{10}$, is denied by a witneſs whoſe credibility is only $\frac{6}{10}$, its probability is diminiſhed, but not deſtroyed; for here $ba'=8\times 4=32$, and $b'a=2\times 6=12$, then we have $\frac{32}{32+12}=\frac{32}{44}=\frac{8}{11}$, the probability after negative atteſtation; hence the probability is diminiſhed from $\frac{8}{10}$ to $\frac{8}{11}$.

569. If a probable fact is *denied* by a witneſs, whoſe credibility is *ſuperior* to the probability of the fact, as if a fact whoſe probability is $\frac{6}{10}$, is denied by a witneſs whoſe credibility is $\frac{8}{10}$, it becomes improbable, for here $ba'=6\times 2=12$, and $b'a=4\times 8=32$, then $\frac{12}{12+32}=\frac{12}{44}=\frac{6}{22}=\frac{3}{11}$.

SECTION IX.

OF TESTIMONY APPLIED TO INDIFFERENT OR EQUICASUAL FACTS.

570. If ſuch a fact be *affirmed* by any credible witneſs, it gains a degree of probability equal to the credibility of the witneſs, No. 493. Thus the probability of ſuch facts being $\frac{1}{2}$, ſuppoſe it *affirmed* by a witneſs whoſe credibility is $\frac{6}{10}$, then $ba=1\times6=6$, and $b'a'=1\times4=4$, then $\frac{6}{7+4}=\frac{6}{10}$.

571. If it be *denied* by a credible witneſs, it becomes improbable in proportion to the credibility of the witneſs, No. 493.

Thus if a fact be indifferent or equicaſual, as $\frac{4}{8}$, and it be denied by a witneſs, whoſe credibility is $\frac{6}{10}$, then $ba'=4\times4=16$, and $b'a=4\times6=24$, then $\frac{16}{16+24}=\frac{16}{40}=\frac{8}{20}=\frac{4}{10}$.

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